

Resource Management Consultants

8138 South State Street, Suite 2A Midvale, UT 84047 801-255-2626



January 10, 2010

Kathryn Hernandez
United States Environmental Protection Agency
Region 8 Ref: 8EPR-EP
1595 Wynkoop St
Denver, CO 80202

RE: Richardson Flat Quarterly Status Report for October through December 2009

Dear Ms. Hernandez:

This Quarterly Status Report details site activities conducted at Richardson Flat for October through December 2009.

Sampling Activities Conducted:

Three confirmation samples were collected in area B-1W. Nineteen confirmation samples were collected in the South Diversion Ditch (SDD). Fourteen cover depth confirmation samples were collected in area B-1-W. The samples were analyzed with the XRF, Four imported soil confirmation samples were collected and analyzed by the analytical laboratory. Seven Quality Assurance/Quality Control (QA/QC) samples were collected and submitted to the laboratory. Four air monitoring samples collected were analyzed by the laboratory.

Sample locations are presented in the attached Phase 3 Task Completion Report for 2009 Construction Season (Phase 3 TCR) which was approved by the United States Environmental Protection Agency (EPA) on November 22, 2009.

Results:

The results of sampling activities are presented on Tables 1 through 5 of the attached Phase 3 TCR. All confirmation sample results meet Site PRGs.

Other Activity:

Remediation in area B-1-W and a portion of the South Diversion Ditch remediation was completed in November. The work was conducted in accordance with the Phase 3 2009 Construction Season Field Construction Plan. Remediation consisted of:

- Excavation of contaminated sediments in the SDD;
- Relocation of a portion of the SDD to an area that does not contain tailings;
- Creation of a repository in the area that formerly contained the SDD:
- Excavation of contaminated soil in Area B-1-W;

- Placement of soil cover in area B-1-W; and
- Revegetation of remediated areas. Revegetation consisted of seedbed preparation and seed placement with a protective straw mulch cover. The straw mulch was crimped into place.

The above described work is documented in the Phase 3 2009 Construction Season Task Completion Report which was approved by EPA on November 22, 2009 and is attached to this report.

- New digital aerial photograph and topography was generated.
- Piezometer readings were reported in the 4th quarter of 2009. A report prepared by AGEC is attached to this report.
- Discussions regarding NRD issues with U.S Fish and Wildlife continued with the FWS providing input on the wetlands in F4 and F5 north of the Park and Ride. An email documenting this input is attached to this report.

Park and Ride Construction – The Park and Ride was completed in 2009.

Approximately 1,440 cubic yards of material were imported from the Montage Hotel construction site located in Empire Canyon. Another 890 cubic yards was imported to the Richardson Flat Site. This material was from various projects throughout Park City. A breakdown of each source is available if needed.

Planned Activities: January through March 2010

Work at the Site will continue as winter weather permits.

RMC will submit additional Field Construction Plans and Task Completion Reports as required.

RMC will collect import samples for every 5,000 cubic yards in accordance with the Field Sampling Plan (RMC, 2007). Additional opportunity samples will be collected as required.

Address roadway drainage issues as they relate to the wetlands near the Cottonwood pond.

If you should have any questions or comments, please contact me at 801-255-2626.

Best regards,

Todd Leeds

RMC

Cc: Kerry Gee, Kevin Murray, Dan Wall, John Isanhart, Muhammed Slam

Attachments:

Phase 3 Task Completion Report for 2009 Construction Season. AGEC Piezometer readings summary report. Email from John Hughes with FWS

PHASE 3 TASK COMPLETION REPORT FOR 2009 CONSTRUCTION SEASON

RICHARDSON FLAT TAILINGS SITE

EPA SITE ID: UT980952840

November 17, 2009

Prepared for:

United Park City Mines P.O. Box 1450 Park City, UT 84060

Prepared by:

Resource Environmental Management Consultants d.b.a. RMC 8138 South State Street, Suite 2A Midvale, Utah 84047

> Phone: (801) 255-2626 Fax: (801) 255-3266

PHASE 3 TASK COMPLETION REPORT FOR 2009 CONSTRUCTION SEASON

RICHARDSON FLAT TAILINGS SITE

EPA SITE ID: UT980952840

November 17, 2009

Prepared for:

United Park City Mines P.O. Box 1450 Park City, UT 84060

Prepared by:_		Date: 11-17-09
	Jim Fricke Resource Management Consultants	
	Lywr J L	
Reviewed by:	Kerry Gee	Date: 11-17-09
Reviewed by:	Luly All out Kathryn/Hernandez USEPA/Remedial Project/Manager	Date: 11-22-09
Reviewed by:	Mo Slam	Date:

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1.0 INTRODUCTION

This Task Completion Report (TCR) details the work completed for the Phase 3 2009 Construction Season at Richardson Flat, ID UT980952840, located approximately two miles northeast of Park City, Utah. Phase 3 remedial features are presented in Figure 1-1. The remedy selected by United States Environmental Protection Agency (EPA) at the Richardson Flat Tailings Site (Site) was split into Tasks to facilitate remedy completion and bond release procedures. Phase 3 activities encompass Tasks 5 and 6 (Fig.1-1) as presented in the Remedial Design and Remedial Action Work Plan (RD/RA, RMC 2007a).

This is the third TCR submitted to EPA. The work completed as described in this TCR represents the third of at least four annual phases of construction. Each phase consists of individual or groups of tasks to be completed in single construction season. The Field Construction Plan (FCP) for Task 1 was submitted to EPA and approved on July 16, 2008. The Task Completion Report (TCR) for Task 1 was approved by EPA on July 16, 2008. The FCP for Phase 2, (2008 Construction Season) was submitted to EPA and approved on September 23, 2008. The Task Completion Report (TCR) for Phase 2 was approved by EPA on October 30, 2008. Construction procedures and methodologies documented in this report were described in the Phase 3 Field Construction Plan for 2009 Construction Season (Phase 3 FCP, RMC, 2009) which was approved by EPA on August 17, 2009.

A full description of Site background, investigative history, specifications, health and safety, design elements, project management and construction procedures are presented in the Remedial Design and Remedial Action Work Plan (RD/RA, RMC 2007a).

1.1 Work Performed

Work performed in the Phase 3 2009 Construction included:

Task 5, Area B-1-W:

- 1) Relocation of the west portion of the South Diversion Ditch (SDD) from its historic alignment to a new location approximately 250 feet south. This activity resulted in removal of approximately 42,790 cubic yards of contaminated material;
- 2) A New Tailings Storage Area (Area B-1W-RP) was constructed and is located north of the newly relocated diversion ditch and encompasses the area of the old diversion ditch footprint.
- 3) Additional wetland and riparian areas were constructed along the banks of and associated with the newly relocated diversion ditch (Figure 1-1).
- 4) Grading and confirmation sampling approximately 29,800 cubic yards was moved in the grading operation; and

Task 6, Area B-1-W:

- Contaminated sediments in the former South Diversion Ditch footprint were removed, drainage rock was placed and a PVC liner was installed over the drainage rock. Three feet of clay like soil was placed over the liner and machine compacted.
- Placement of clean cover soil and revegetation after the completion of tailings placement.

1.1.1 Imported Soil Specifications

As required in the RD/RA work plan, cover and topsoil placed in upland areas contained less than 500 parts per million (ppm) lead and 100 ppm arsenic and topsoil placed in wetland areas, including the South Diversion Ditch, contained less than 310 ppm lead. Imported soil sample results are presented in Section 4.0 and Table 3.0.

2.0 WORK PROCEDURES

Work was conducted according to procedures presented in the Phase 3 Field Construction Plan for the 2009 Construction Season.

2.1 2009 Work Activities

Phase 3 2009 work activities in area B-1-W and the South Diversion Ditch (SDD) consisted of:

- Source removal;
- Creation of a new tailings repository;
- Relocation of the South Diversion Ditch;
- Placement and grading of low permeability cover soil, where required;
- Placement of topsoil, where required;
- Channel reconstruction, where required;
- · Wetland construction, where required; and
- Wetland and upland revegetation.

Work conducted in Area B-1-W and the western portion of the SDD located downstream of the main diversion ditch crossing (Figure 1-1) was initiated by the construction of a new ditch and pond system in Area B-1-W. This ditch and pond system was used to replace the west portion of the SDD. Ditch construction began at the road crossing culvert and at the pond located at the terminus of the SDD (Figure 1-1). Upstream water was pumped around the construction area allowing excavation of the new ditch to progress from both ends.

Excavation of contaminated sediments was conducted in the former SDD. After the removal of contaminated sediments, drainage rock was placed to ensure movement of any subsurface water. The drainage rock was installed downstream to an existing

wetland. A 20 mil PVC liner was placed over the drainage rock to create a sealed system to ensure that fines would not impair movement of drain water. Three feet of clay soil was placed and machine compacted over the PVC liner. Tailings from the excavation of the new SDD were placed over the clay creating the new repository area.

Work in Area B-1-W was re-commenced upon the completion of SDD remediation, with the removal and or covering of tailings in the area located south of the diversion ditch and placement of tailings in the newly created repository area (Figure 1-1). One culvert was placed beneath the rail trail to connect one outlying wetland area to wetlands associated with the new South Diversion Ditch alignment (Figure 1-1). Tailings excavated from area B-1-W were placed in area B-1W-RP which previously contained the SDD. All areas containing tailings remaining in-place were covered in accordance with the RDRA.

2.2 Source Removal

Source removal work was conducted as specified in Section 6.0 of the RD/RA. The following work procedures were conducted:

- 1) Excavation and construction areas were cleared and grubbed prior to the placement of materials. Clearing and grubbing included the removal of organic matter such as plants, trees and woody material, as well as any other material from the Site. Large non-organic materials such as boulders that interfered with grading were removed as required.
- Appropriate dust control was conducted during all excavation, soil placement, transport and grading activities.
- 3) Air monitoring was undertaken during earthmoving activities, in accordance with procedures outlined in Section 11.1.1 or the RD/RA and Section 4.4.5 of the FSP. Air monitoring results are presented in Table 5.

- 4) Visible tailings materials were excavated from low-lying areas subject to seasonal ponding or interaction with shallow groundwater. Excavation extended to the visual interface between the tailings and native soils. Tailings excavation was guided using a field portable X-ray Fluorescence Meter (XRF). Excavation and transport was staged to avoid the re-contamination of clean areas.
- 5) Where mine waste was transported to and placed in the Impoundment, the material was graded to conform to general site topography prior to the placement of cover soils.
- 6) Surfaces and subgrades were graded to approximate final configurations and contours prior to cover and topsoil placement, if required. Subgrades and final graded surfaces were confirmed by conventional survey techniques where applicable.
- 7) Imported soils were screened with the XRF. A five sub-sample composite was collected for every 5,000 cyds and screened with the XRF. Greater than five-percent of the composite samples were submitted to the laboratory to confirm XRF results. All imported soil met the specifications in Section 1.1.1. with the exception of one sample that is further explained in Section 4.4. Sampling protocol and analytical methodologies are described in the Field Sampling Plan (FSP, RMC, 2007b). Imported soil XRF sample results are presented in Table 3. Lab-XRF QA/QC results are presented in Table 4.
- 8) Cover soils selected for use at the Site were low permeability, high clay content soils typical of those found in the region. Large rock material was avoided. Clay rich soils located on-site were used as cover material using the same criteria outlined in Section 6.1 of the RD/RA for quality control. A sizeable quantity of clean native materials excavated from the new diversion ditch and other areas were also used as on site cover material.

- 9) Cover soils placed at the Site were compacted with tracked or equivalent equipment. Compaction methods also included rolling and/or vibrating, as necessary. Cover soils were inspected and approved by United Park or its representatives prior to topsoil placement.
- 10) The final cover subgrade surface was uniform to allow for the placement of a consistent topsoil layer.

Note: Items 11 through 13 are referred to as General Topsoil Procedures.

- 11) Final surfaces, grades and erosion control structures were approved by United Park or its representative.
- 12) Topsoil was screened to remove particles greater than six inches and was suitable to support vegetation. Topsoil was placed to a minimum depth of six inches and contained sufficient organic matter and nutrients to promote revegetation.
- 13) The seedbed consisted of topsoil placed during remedial activities. Topsoil was lightly compacted and scarified. The seedbed was roughened prior to seeding.
- 14) Wetland construction consisted of additional grading and the construction of habitat features. Areas were excavated into the shallow water table to provide additional aquatic habitat. Wetland construction is discussed further in Section 2.3. Wetland construction in areas B-1-W and the South Diversion Ditch (Figure 1-1) was conducted to provide additional wetland habitat and to provide compensation for potential Natural Resource Damages.
- 15) Upland habitat was created adjacent to wetland areas in B-1-W by covering mine waste with at least eighteen inches and up to three feet of clay and topsoil. Upland construction is further discussed in Section 2.4 (Figure 1-1). Creation of upland

habitat was conducted to provide additional compensation for potential Natural Resource Damages.

- 16) Revegetative seeding and related activities were completed on all remediated areas (upland and wetland).
- 17) The upland seed mix included a mixture of deep-rooted annual and perennial native grass and forb species. The annual species provide rapid germination to aid in short term revegetation. The short-term revegetation will decrease the runoff potential of the slope and will keep the imported soil in place. Perennial species will provide longer term, more stable revegetation. Wetland areas were revegetated with wetland specific species. Appendix C of the RD/RA contains the seed specifications for the Site.
- 18) Completion confirmation sampling is detailed in Section 4.0.

2.3 Cover Placement

Cover placement was conducted as specified in Section 6.0 of the RD/RA. The following work procedures were conducted:

- Dust control measures were implemented during all excavation, soil placement, transport, and grading activities. Water was applied to work surfaces and haul roads as dust control.
- 2) Surfaces and subgrades were graded to approximate final configurations and contours prior to cover and topsoil placement. Subgrades and final graded surfaces were confirmed by conventional survey techniques where applicable.
- 3) Imported soils were screened with the X-ray Fluorescence meter (XRF). In addition, five sub-sample composite samples were collected for every 5,000 cyds and sampled

with the XRF. Five percent of XRF-sampled imported soil samples were submitted to the laboratory for QA/QC lead and arsenic analysis. All imported soil met the specifications in Section 1.1.1. Sampling was conducted in accordance with protocols and analytical methodologies as described in the FSP. Sample results are presented in Section 4.0. Imported soil XRF sample results are presented in Table 3. Lab-XRF QA/QC results are presented in Table 4.

- 4) Cover soils selected for use at the Site were low permeability, high clay content soils typical of those found in the region. Large rock material was removed prior to placement. Clay rich soils from an on-Site stockpile were used as cover material using the same criteria outlined in Section 6.1 of the RD/RA and Section 2.2 of the Phase 2 FCP for quality control.
- 5) Cover soils placed at the Site were compacted with tracked or equivalent equipment. Compaction methods also included rolling and/or vibrating, as necessary. Cover soils were inspected and approved by United Park or its representatives prior to topsoil placement.
- 6) The final cover subgrade was graded to allow for the placement of a consistent topsoil layer.
- 7) Final surfaces, grades and erosion control structures were approved by United Park or its representative.
- 8) Completion confirmation sampling is detailed in Section 4.0.
- 9) Topsoil was screened to remove particles greater than six inches and was suitable to support vegetation. Topsoil was placed to a minimum depth of six inches and contained sufficient organic matter and nutrients to promote revegetation.
- 10) The seedbed consisted of topsoil placed during remedial activities. Topsoil was

lightly compacted and scarified. The seedbed was roughened prior to seeding.

- 11) Wetland construction consisted of additional grading and the construction of habitat features. Wetland construction is discussed further in Section 2.3. Wetland construction in area F-8 (Figure 1-1) was conducted to provide additional wetland habitat and to provide Natural Resource Damage offsets if any.
- 12) Revegetative seeding and related activities were completed on all remediated areas (upland and wetland).
- 13) The upland seed mix included a mixture of deep-rooted annual and perennial native grass and forb species. The annual species provide rapid germination to aid in short term revegetation. The short-term revegetation will decrease the runoff potential of the slope and will keep the imported soil in place. Perennial species will provide longer term, more stable revegetation. Wetland areas were revegetated with wetland specific species. Appendix C of the RD/RA contains the seed specifications for the Site.

2.4 Wetland Construction

Wetland construction in areas B-1-W and the South Diversion Ditch (Figure 1-1) was conducted to provide additional wetland habitat and to provide compensation to any potential Natural Resource Damages. Constructed wetland features included:

- Habitat islands;
- Excavation and grading to provide open water habitat;
- Transitional shoreline areas:
- Flow direction structures including dikes and swales;
- Topsoil placement; and
- Revegetation with wetland specific seed mix and plant species.

All wetland construction procedures were conducted in accordance with the procedures described in Section 2.2. All materials used in wetland construction meet the specifications described in Section 1.1.1 and Section 6.0 of the RD/RA.

2.5 Upland Construction

Upland construction in areas of B-1-W and the South Diversion Ditch (Figure 1-1) was conducted to provide additional upland habitat and to provide compensation to any potential Natural Resource Damages. Constructed upland features included:

- Upland habitat;
- Excavation and grading to provide upland habitat;
- Transitional upland areas;
- Topsoil placement; and
- Revegetation with upland specific seed mix and plant species.

All upland construction procedures were conducted in accordance with the procedures described in Section 2.2 and 2.3. All materials used in upland construction meet the specifications described in Section 1.1.1 and Section 6.0 of the RD/RA.

3.0 STORMWATER MANAGEMENT

Stormwater management was undertaken to:

- Reduce the potential for off-Site migration of sediments, soil and tailings; and
- Eliminate the re-contamination of areas that have been covered or have undergone source removal.

General stormwater management elements included:

- Berms, wattle and/or silt fencing was placed as required to prevent the migration of materials from work areas;
- Sediment barriers and berms were placed in the South Diversion Ditch to capture sediment and prevent downstream migration.
- Hay or straw bale barriers were placed in appropriate ephemeral channel features that drain from work areas. The hay bales were placed downgradient from the silt fence or wattle barriers;
- A supply of hay or straw bales and wattle material was stored on-site during construction; and
- Stormwater runoff protection measures will remain in-place until revegetation efforts are complete.

General procedures to reduce the tracking of contaminated materials into uncontaminated areas included:

- All trucks and equipment working in contaminated materials (e.g. tailings and sediments) were decontaminated prior to working with clean materials.
 Decontamination procedures are described in Section 11.8 of the RD/RA;
- A stabilized construction entrance was used to remove gross contamination from trucks hauling tailings;
- All trucks and equipment were decontaminated prior to leaving the Site; and
- Dust control measures were implemented as necessary as described in Section 11.1.1
 of the RD/RA.

Specific stormwater runoff protection elements implemented prior to and during construction included:

 Work areas in the SDD were isolated with a series of berms constructed from clean soil. Surface water was pumped from each area prior to and during excavation.

4.0 COMPLETION CONFIRMATION

Completion of work is based upon confirmation that the following Phase 3 2009 Construction Season Completion Milestones are complete:

- Source removal is complete in the Area B-1-W and the west portion of the South Diversion Ditch;
- 2) Cover placement is complete in Area B-1-W;
- 3) Reclamation (surface grading and drainage control) is complete;
- 4) Wetland construction is complete; and
- 5) Confirmation samples verify source removal and cover installation meets specifications.

4.1 Areas B-1-W and South Diversion Ditch

Source removal in these areas was confirmed using the following methodology:

- Confirmation sampling for lead and arsenic in upland areas.
- Confirmation sampling for lead in wetland areas.

Cover placement Area B-1-W was confirmed using the following methodology:

 Cover thickness confirmation sampling for lead and arsenic concentrations up to a depth of eighteen inches.

Confirmation data was collected on a grid located on 200-foot centers. The South Diversion Ditch was sampled on 100-foot centers. Sample locations are presented on Figure 4-1. Source removal confirmation results are presented in Table 1. Cover depth confirmation sample results are presented in Table 2.

4.2 Source Removal Confirmation

Source removal confirmation requirements are set forth in Sections 1.1 and 3.0 of the Field Sampling Plan (FSP, RMC, 2007c). Source removal confirmation samples were collected at forty-one locations. Samples were analyzed with the XRF. Five XRF-sampled confirmation samples were submitted to the laboratory for QA/QC analysis. Source removal confirmation results are presented in Table 1. QA/QC sample results are presented in Table 4. The sampling results meet applicable standards and requirements for source removal.

4.2.1 Area B-1-W

As provided in the RD/RA, (RMC, 2007a), lead concentrations for source removal in Area B-1-W were set at 500 parts per million (ppm) for soils and 310 ppm for sediments. Average lead concentrations for all source removal confirmation samples in Area B-1-W were 151.4 ppm. Lead concentrations ranged from 68.1-396 ppm. Source removal sample results from this area are presented on Table 1. Source removal sample locations are presented on Figure 4-1.

4.2.3 SDD

As provided in the RD/RA, (RMC 2007a), lead concentrations for source removal in the South Diversion Ditch (SDD) were set at were set at 500 ppm for soils and 310 ppm for sediments. Average lead concentrations for all source removal confirmation samples in the SDD were 108.3 ppm. Lead concentrations ranged from <64 to 203 ppm. Source removal sample results for this area are presented on Table 1. Source removal sample locations are presented on Figure 4-1.

4.3 Cover Thickness Confirmation

As provided in the RD/RA, (RMC 2007a), minimum depths for cover materials were to be confirmed by methods described in the FSP (RMC, 2007c). In accordance with these verification standards, the thickness of clean cover was measured at thirteen locations in B-1-W. Cover sample depths and XRF results are presented are presented in Table 2. The results indicate that cover placement is complete and all areas measured contain at least eighteen inches of cover as specified in the RD/RA and Phase 2 FCP.

4.4 Imported Soil Sampling

As provided in the RD/RA, (RMC 2007a), imported soils were to be screened by using procedures described in the FSP (RMC, 2007c). In accordance with these standards, imported soil sources were screened with the XRF; in addition, five sub-sample composite samples were collected for every 5,000 cyds of imported soil. Two imported soil samples were sampled with the XRF and three imported soil samples were submitted to the laboratory for lead and arsenic analysis. Imported soil sample results are presented in Table 3. All cover and topsoil used in upland areas contained less than 500 ppm lead and 100 ppm arsenic. There was one exception to the above results, sample SLB1W-1, was collected on October 13, 2009 from a stock pile of topsoil contained 1,200 ppm lead (Table 3). By the time analytical results were available the topsoil was spread near cover sample location 3H. Followup XRF and laboratory sampling indicated that the offspecification soil was no longer off-specification. Five XRF and two laboratory samples were collected in this area with an average lead concentration of 111 ppm. All cover and topsoil used in wetland areas contained less than 310 ppm lead. Sampling was conducted in accordance with protocols and analytical methodologies as described in the FCP and FSP.

4.5 QA/QC Sampling

In accordance with the QA/QC Plan presented in the FSP (RMC, 2007c), three of thirty-eight source removal and two of thirty-nine cover depth confirmation samples were submitted to American West Analytical Laboratories for XRF-Lab confirmation. Duplicate laboratory samples were also submitted. This exceeds the five-percent QA/QC criteria specified in the FSP. The laboratory samples contained 9.5 to 190 ppm lead. Relative percent differences for XRF and laboratory results ranged from 9.53% to 135.4% for lead. The high RPD values are related to the low metals concentrations in the soil samples analyzed, a small difference in low concentrations will lead to a high RPD. QA/QC sample results are presented in Table 4.

Two duplicate soil samples were submitted to American West Analytical Laboratories for QA/QC. Analytical laboratory lead concentrations ranged from 9.9 to 150 ppm. Relative percent differences for duplicate samples ranged from 23.5% to 34.3%. The high RPD values are related to the low metals concentrations in the soil samples analyzed, a small difference in low concentrations will lead to a high RPD. QA/QC sample results are presented in Table 4.

4.7 Air Monitoring

In accordance with Section 4.4.5 of the FSP (RMC, 2007c), six air samples were collected from site workers. Lead concentrations ranged from <0.390 ug/m3 to 2.434 ug/m3. Three of the six samples contained lead concentrations below laboratory detection limits, an average was not calculated. These levels are significantly below the OSHA Action Level and PEL for lead of 30 ug/m3 and 50 ug/m3, respectively. Six offsite ambient air samples were also collected upwind and downwind of the Site, in accordance with Section 4.4.5 of the FSP (RMC, 2007c). Lead concentrations ranged from <0.354 ug/m3 to <0.692 ug/m. All samples contained lead concentrations below laboratory

detection limits, an average was not calculated. These levels are significantly below the National Ambient Air Quality Standard for lead of 1.5 ug/m3, quarterly average.

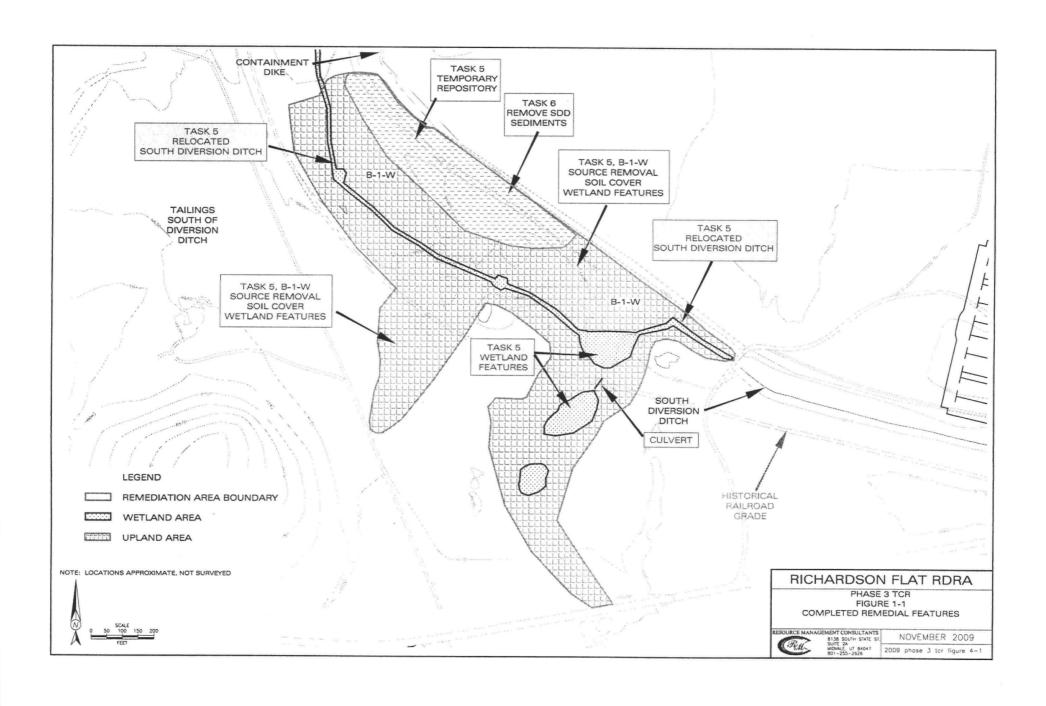
5.0 REFERENCES

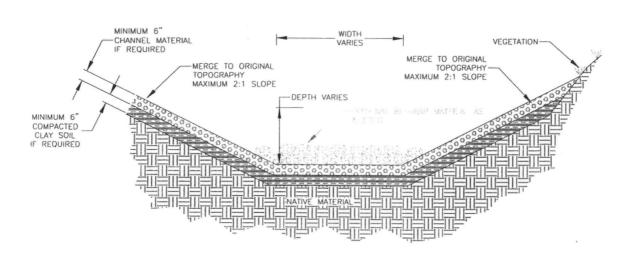
Resource Management Consultants, Inc (RMC), 2007a, Remedial Design/Remedial Action Plan (RD/RA), Richardson Flat, Site ID Number: UT980952840, With Attached Work Plan.

Resource Management Consultants, Inc (RMC), 2007b, Phase 2 Field Construction Plan for 2008 Construction Season, Richardson Flat, Site ID Number: UT980952840.

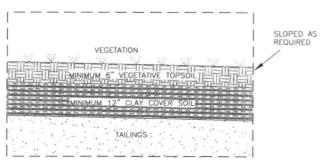
Resource Management Consultants, Inc (RMC), 2007c, Field Sampling Plan, Remedial Investigation, Richardson Flat, Site ID Number: UT980952840, With Attached Work Plan.

Resource Management Consultants, Inc (RMC), 2007c, Health and Safety Policy, Remedial Investigation, Richardson Flat, Site ID Number: UT980952840, With Attached Work Plan.

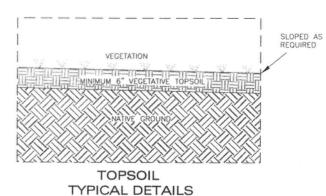




CHANNEL CONSTRUCTION TYPICAL DETAILS



COVER SOIL
TYPICAL DETAILS



RICHARDSON FLAT RDRA

PHASE 3 TCR FIGURE 2-1 CHANNEL AND SOIL COVER TYPICALS

RESOURCE MANAGEMENT CONSULTANTS



MENT CONSULTANTS 8138 SOUTH STATE ST. SUITE 2A MIDVALE, UT 84047 801-255-2626 NOVEMBER 2009

phase 3 tor fig 2-1.dwg

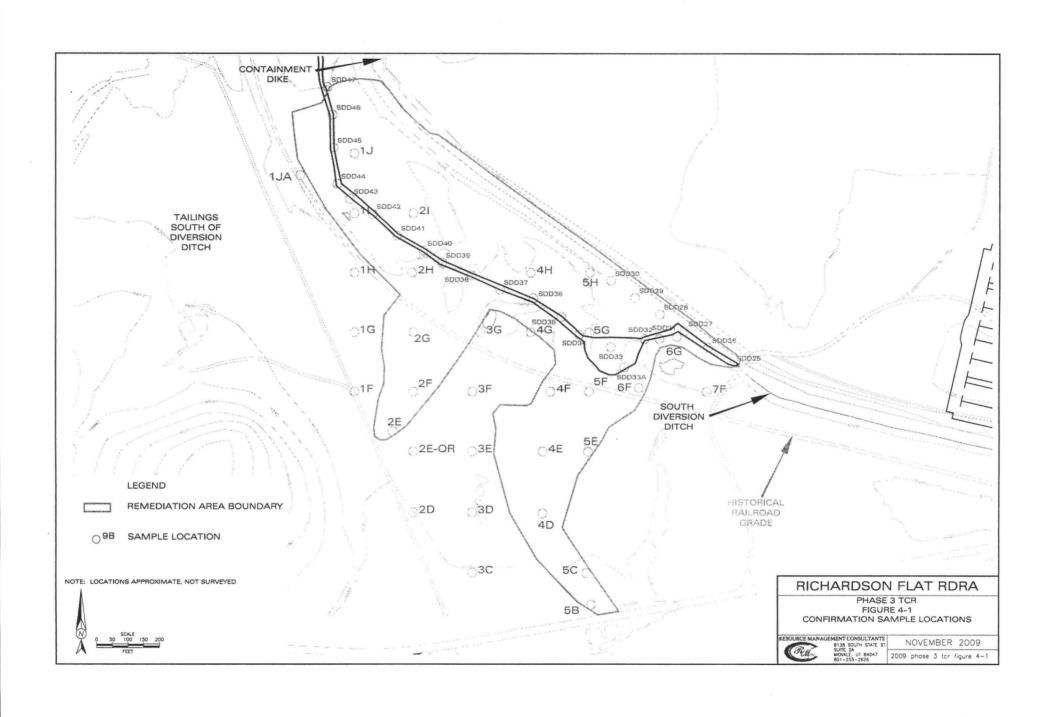


Table 1 - Source Removal Confirmation Sample Results

All Results ppm

B-1-W

D- 1-44					
Date	Sample ID	Pb	Method		
27-Aug-09	SL-4G	399	XRF		
27-Aug-09	SL-4F	170	XRF		
27-Aug-09	SL-5F	92	XRF		
27-Aug-09	SL-4E	191	XRF		
27-Aug-09	SL-3E	396	XRF		
27-Aug-09	SL-3G	75	XRF		
2-Sep-09	SL-6F	58	XRF		
2-Sep-09	SL-6G	131	XRF		
2-Sep-09	SL-5E	284	XRF		
24-Sep-09	SI-1I	89	XRF		
24-Sep-09	SL-1G	<67.6	XRF		
24-Sep-09	SL-1F	77.2	XRF		
24-Sep-09	SL-2H	142	XRF		
24-Sep-09	SL-JA	58.6	XRF		
24-Sep-09	SL-IH	168	XRF		
11-Nov-09	SL-4D	87.5	XRF		
11-Nov-09	SL-5D	68.1	XRF		
11-Nov-09	SL-5B	87.4	XRF		

Range: 68.1-396 Mean: 151.4

SDD

Date	Sample ID	Pb	Method
8-Jul-09	SDD-25	163.9	XRF
8-Jul-09	SDD-26	170.5	XRF
8-Jul-09	SDD-27	120.3	XRF
8-Jul-09	SDD-28	162.9	XRF
8-Jul-09	SDD-29	197.2	XRF
8-Jul-09	SDD-30	189.7	XRF
26-Oct-09	SDD-31	83	XRF
26-Oct-09	SDD-32	97.3	XRF
26-Oct-09	SDD-33	78	XRF
26-Oct-09	SDD-33a	<64	XRF
26-Oct-09	SDD-34	68	XRF
26-Oct-09	SDD-35	61.3	XRF
26-Oct-09	SDD-36	60.6	XRF
26-Oct-09	SDD-37	67.3	XRF
26-Oct-09	SDD-38	59.7	XRF
26-Oct-09	SDD-39	66.7	XRF
26-Oct-09	SDD-40	77	XRF
26-Oct-09	SDD-41	112.3	XRF
26-Oct-09	SDD-42	203	XRF
26-Oct-09	SDD-43	95	XRF
26-Oct-09	SDD-44	77.7	XRF
26-Oct-09	SDD-45	94	XRF
26-Oct-09	SDD-46	89.7	XRF
26-Oct-09	SDD-47	95.3	XRF
	5	0.4.000	

Range: <64-203 Mean: 108.3

Table 2 - Cover Depth Confirmation Sample Results

All Results ppm

Cover

Date	Sample ID	Sample Depth	Pb	As	Method
16-Oct-09	, 1J	6"	239	BDL	XRF
;	İ	12"	122	BDL	XRF
		18"	164	BDL	XRF
16-Oct-09	21	6"	103	BDL	XRF
	•	12"	122	BDL	XRF
		18"	141	BDL	XRF
14-Aug-09	5G	6"	92.7	BDL	XRF
1		12"	<71	BDL	XRF
		18"	57.1	BDL	XRF
26-Oct-09	3D	6"	108	BDL	XRF
	1	12"	94	BDL	XRF
	, -	18"	87	BDL	XRF
26-Oct-09	3C	6"	<88	BDL	XRF
		12"	<81	BDL	XRF
		18"	<89	BDL	XRF
26-Oct-09	2D	6"	152	BDL	XRF
		12"	145	BDL	XRF
		1,8"	97	BDL	XRF
26-Oct-09	2E-OR	6"	120	BDL	XRF
		12"	68	BDL	XRF
		18"	75	BDL	XRF
26-Oct-09	. 3F	6"	106	BDL	XRF
	4	12"	63	BDL	XRF
		18"	57	BDL	XRF
26-Oct-09	5H	6"	240	BDL	XRF
		12"	209	BDL	XRF
i i		18"	118	BDL	XRF
26-Oct-09	7F	6"	173	BDL	XRF
	:	12"	201	BDL	XRF
		18"	127	BDL	XRF
13-Nov-09	2E	6"	273.6	BDL	XRF
	-	12"	143.2	BDL	XRF
		18"	73.6	BDL	XRF
13-Nov-09	2F	6"	89.2	BDL	XRF
	;	12"	.97.2	BDL	XRF
		18"	79.3	BDL	XRF
13-Nov-09	2G	6"	<56.1	BDL	XRF
		12"	95	BDL	XRF
	1	18"	141.2	BDL	XRF
		Range:	<56-273		_

Range: <56-273 Mean: 125.7

All units Part Per Million (PPM)

BDL - Below instrument detection limit

Table 3 - Imported Soil Confirmation Sample Results

Laboratory

Date	Sample ID	Pb	As
14-Aug-09	CV-TS81409	21	9
13-Oct-09	CUB1-W-1	37	18
13-Oct-09	SLB1W-1	1,200	80
6-Nov-09	RFSL-11609-A	77	1'3
6-Nov-09	RFSL-11609-A	150	14
	Range:	21-1,200	9-80
	Mean:	297.0	26.8

XRF

Date	Sample ID	Pb	As
14-Aug-09	11	200	BDL
14-Aug-09	2	301	BDL
	Range:	200-301	
	Mean:	250.5	

BDL - Below instrument detection limit All units Parts Per Milliom (PPM)

Table 4 - QA/QC Sample Results

All results ppm

XRF-Lab

Sample ID	Pb
SDD-39 (XRF)	66:7
SDD-39 (LAB)	42
RPD (%)	45.4

Sample ID	Pb
SDD-36 (XRF)	60.6
SDD-36 (LAB)	15
RPD (%)	120.6

Sample ID	Pb
SDD-31 (XRF)	83
SDD-31 (LAB)	16
RPD (%)	135.4

Sample ID	Pb
3C-12" (XRF)	<81
3C-12" (LAB)	9.9
RPD (%)	NA

Sample ID	Pb
5H-12" (XRF)	209
5H-12" (LAB)	190
RPD (%)	9.5

Duplicates

Sample ID	As	Pb
3C-12"	≤5.8	9.9
503C-12"	<5.8	7
RPD (%)	NA	34.3

Sample ID	As	Pb
5H-12"	13	190
505H-12"	13	150
RPD (%)	0.0	23.5

Table 5 - Air Monitoring Sample Results

DATE	SAMPLE ID		LEAD mg/ SAMPLE		LEAD ug/m3	LEAD PEL (ug/m3)	NAAQS (ug/m3)	Air Volume L	NOTES	
27-Aug-09	RF-Up	<	0.00033	<	0.564	NA	1.5	585	Upwind Sample	
27-Aug-09	RF-Dn	<	0.00033	<	0.509	NA	1.5	648	Downwind Sample	
27-Aug-09	RF-Hoe		0.00038		0.677	50	NA	561	Site Worker Personal Sample	
27-Aug-09	RF-Am	<	0.00033	<	0.541	50	NA	610	Site Worker Personal Sample	
9-Sep-09	PS-Up	<	0.00033	<	0.647	NA	1.5	510	Upwind Sample	
9-Sep-09	PS-Down	<	0.00033	<	0.692	NA	1.5	477	Downwind Sample	
9-Sep-09	PS-Hoe		0.0011		2.434	50	,NA	452	Site Worker Personal Sample	
9-Sep-09	PS-Haul Truck	<	0.00033	<	0.797	50	NA NA	414	Site Worker Personal Sample	
22-Oct-09	PS-Up.	<	0.00033	<	0.365	NA	1.5	903	Upwind Sample	
22-Oct-09	PS-Down	<	0.00033	<	0.354	NA	1.5	933	Downwind Sample	
22-Oct-09	PS-Hoe	<	0.00033	<	0.390	50	NA	846	Site Worker Personal Sample	
22-Oct-09	PS-Haul Truck	Г	0.00042	<	0.493	50	NA	852	Site Worker Personal Sample	

Definitions:

PEL - Permissible Exposure Limit. Permissible Exposure Limits are airborne concentrations of substances that workers may be exposed to by inhalation while they are at work. In theory, they represent conditions which it is believed that nearly all workers can be exposed day after day without adverse health effects.

Action Level - The Action Level is the exposure level at which OSHA regulations take effect. This is generally one-half of the PEL.

NAAQS - National Ambient Air Quality Standards. These are standards established by EPA that apply for outdoor air throughout the country.

APPENDIX A ANALYTICAL LABORATORY REPORTS



Kerry Gee

AMERICAN United Park City Mines Co.

WEST PO Box 1450 ANALYTICAL

LABORATORIES

Park City, UT 84060-

TEL: (435) 608-0954

FAX (435) 615-1239

RE: Richardson Flat

463 West 3600 South Salt Lake City, Utah 84115

Dear Kerry Gee:

Lab Set ID: 0910474

American West Analytical Laboratories received 7 sample(s) on 10/27/2009 for the analyses presented in the following report.

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com All analyses were performed in accordance to The NELAC Institute protocols unless noted otherwise. American West Analytical Laboratories is certified by The NELAC Institute in the following states: Utah, Colorado, Idaho, and Texas. Certification document is available upon request. If you have any questions or concerns regarding this report please feel free to call.

Kyle F. Gross Laboratory Director

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitaion limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit.

Jose Rocha **QA** Officer

> This is a revised report for a report originally issued 10/28/2009. Per Todd Leeds on 10/28/2009, the sample ID for -001A was changed and pages 1 and 2 were revised.

Thank You,

Approved by

aberatory Director or designee



Client:

Lead

United Park City Mines Co.

Units

mg/kg-dry

Contact: Kerry Gee

Project:

Richardson Flat

AMERICAN Lab Sample ID:

0910474-001

WEST

Client Sample ID: SDD-39

ANALYTICAL Collection Date:

10/26/2009 3:00:00 PM

LABORATORIES Received Date:

10/27/2009

TOTAL METALS
Analytical Results

Method Reporting Analytical
Date Analyzed Used Limit Result Qual

463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686 Toli Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Jose Rocha QA Officer

> > > Report Date: 10/28/2009 Page 2 of 12

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

AMERICAN Lab Sample ID:

0910474-002

WEST

Client Sample ID: 3C-12" ANALYTICAL Collection Date:

10/26/2009 2:00:00 PM

LABORATORIES Received Date:

10/27/2009

	TOTAL METALS Analytical Results	Units	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
463 West 3600 South	Arsenic	mg/kg-dry	10/27/2009 8:16:00 PM	SW6010C	5.8	< 5.8	
Salt Lake City, Utah		mg/kg-dry	10/27/2009 7:09:00 PM	SW6010C	5.8	9.9	
84115							

(801) 263-8686 Toli Free (888) 263-8686 Fax (801) 263-8687 e-mail: awai@awal-labs.com

> Kyle F. Gross **Laboratory Director**

> > Jose Rocha QA Officer

> > > Report Date: 10/28/2009 Page 3 of 12



Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

AMERICAN Lab Sample ID:

0910474-003

WEST Client Sample ID: 503C-12"

ANALYTICAL Collection Date:

10/26/2009 1:00:00 PM

LABORATORIES Received Date:

10/27/2009

	TOTAL METALS Analytical Results	Units	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
463 West 3600 South	Arsenic	mg/kg-dry	10/27/2009 8:20:00 PM	SW6010C	5.8	< 5.8	
Salt Lake City, Utah 84115		mg/kg-dry	10/27/2009 7:13:00 PM	SW6010C	5.8	7.0	
04113							

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Jose Rocha **QA** Officer

> > > Report Date: 10/28/2009 Page 4 of 12

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

AMERICAN Lab Sample ID:

0910474-004

ANALYTICAL Collection Date:

WEST Client Sample ID: 505H-12"

10/26/2009 3:10:00 PM

LABORATORIES Received Date:

10/27/2009

	TOTAL METALS Analytical Results			Method Used	Reporting Limit	Analytical Result	Qual
		Units	Date Analyzed				
463 West 3600 South	Arsenic	mg/kg-dry	10/27/2009 8:24:00 PM	SW6010C	5.5	13	
Salt Lake City, Utah		mg/kg-dry	10/27/2009 7:17:00 PM	SW6010C	5.5	150	
84115							

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> Kyle F. Gross Laboratory Director

> > Jose Rocha **QA** Officer

> > > Report Date: 10/28/2009 Page 5 of 12



Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

AMERICAN Lab Sample ID:

0910474-005

WEST Client Sample ID: 5H-12"

ANALYTICAL Collection Date:

10/26/2009 4:00:00 PM

LABORATORIES Received Date:

10/27/2009

TOTAL METALS			Method	Reporting	Analytical	
Analytical Results	Units	Date Analyzed	Used	Limit	Result	Qual
Arsenic	mg/kg-dry	10/27/2009 8:28:00 PM	SW6010C	5.5	13	
Lead	mg/kg-dry	10/27/2009 7:21:00 PM	SW6010C	5.5	190	
	Analytical Results Arsenic	Analytical Results Units Arsenic mg/kg-dry	Analytical Results Units Date Analyzed Arsenic mg/kg-dry 10/27/2009-8:28:00 PM	Analytical Results Units Date Analyzed Used Arsenic mg/kg-dry 10/27/2009 8:28:00 PM SW6010C	Analytical Results Units Date Analyzed Used Limit Arsenic mg/kg-dry 10/27/2009 8:28:00 PM SW6010C 5.5	Analytical Results Units Date Analyzed Used Limit Result Arsenic mg/kg-dry 10/27/2009 8:28:00 PM SW6010C 5.5 13

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> Kyle F. Gross **Laboratory Director**

> > Jose Rocha **QA Officer**

> > > Report Date: 10/28/2009 Page 6 of 12



Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Lead

Richardson Flat

AMERICAN Lab Sample ID:

0910474-006

WEST Client Sample ID: SDD-36

10/26/2009 5:00:00 PM

mg/kg-dry

ANALYTICAL Collection Date: LABORATORIES Received Date:

10/27/2009

TOTAL METALS

Analytical Results

Analytical Method Reporting

5.4

Units **Date Analyzed**

10/27/2009 7:25:00 PM

Used SW6010C Limit Result

Qual

15

463 West 3600 South Salt Lake City, Utah

84115

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> Kyle F. Gross **Laboratory Director**

> > Jose Rocha QA Officer

> > > Report Date: 10/28/2009 Page 7 of 12



Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

AMERICAN

Lab Sample ID:

0910474-007

Client Sample ID: SDD-31

ANALYTICAL Collection Date:

10/26/2009 4:30:00 PM

LABORATORIES Received Date:

10/27/2009

TOTAL METALS

Method

Analytical Reporting Limit

Analytical Results

Units **Date Analyzed** Used

Result

Lead

mg/kg-dry 10/27/2009 7:29:00 PM SW6010C

5.8

16

Qual

463 West 3600 South Salt Lake City, Utah 84115

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> Kyle F. Gross **Laboratory Director**

> > Jose Rocha QA Officer

> > > Report Date: 10/28/2009 Page 8 of 12



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha OA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0910474

Project: Richardson Flat

Dept: ME

SampType: LCS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
LCS-3623	Lead	mg/kg	SW6010C	18	20.00	0	91.6	75-125			10/27/2009
LCS-3623	Arsenic	mg/kg	SW6010C	18	20.00	0	92.3	75-125			10/27/2009

Report Date: 10/28/2009 Page 9 of 12



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Salt Lake City, Utah 84115
(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687
e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0910474

Project: Richardson Flat

Dept: ME

SampType: MBLK

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
MB-3623	Lead	mg/kg	SW6010C	< 5.0				•			10/27/2009
MB-3623	Arsenic	mg/kg	SW6010C	< 5.0				• '			10/27/2009

Report Date: 10/28/2009 Page 10 of 12



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(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha OA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0910474

Project: Richardson Flat

Dept: ME

SampType: MS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
0910474-001AMS	Lead	mg/kg-dry	SW6010C	67	20.28	41.63	125	75-125		,	10/27/2009
0910474-001AMS	Arsenic	mg/kg-dry	SW6010C	30	20.28	45.71	-79.7	75-125		· 3	10/27/2009

⁻ Matrix spike recoveries and/or high RPDs indicate suspected sample non-homogeneity. The method is in control as indicated by the LCS.

Report Date: 10/28/2009 Page 11 of 12



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(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0910474

Project: Richardson Flat

Dept: ME

SampType: MSD

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qualifiers	Analysis Date
0910474-001AMSD	Lead	mg/kg-dry	SW6010C	65	21.37	41.63	108	75-125	3.36	20		10/27/2009
0910474-001AMSD	Arsenic	mg/kg-dry	SW6010C	38	21.37	45.71	-37.5	75-125	24_3	20	3	10/27/2009

^{2 -} Matrix spike recoveries and/or high RPDs indicate suspected sample non-homogeneity. The method is in control as indicated by the LCS.

Report Date: 10/28/2009 Page 12 of 12

American West Analytical Laboratories





SAMPLE 1D for 1 -001 Changed

28-Oct-09

Work Order: 0910474 WO Type: Standard

WORK ORDER Summary

Client ID:

UNI100

Contact:

Kerry Gee

Project:

Richardson Flat

QC Level: LEVEL ||+

Reviewed by Samantha Broadhead on 10/27/2009

Comments: RMC client: Email copy of report to Todd Leeds; QC2+; Next Day Rush;

Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hld-	~MS	SEL	Sub	Storage
0910474-001A	SDD-39	10/26/2009 3:00:00 PM	10/27/2009 3:33:25 PM	10/28/2009	Soil	3051A-ICPMS-PR					df - met
		•		10/28/2009		6010C-S			\mathbf{Z}		df - met
	SEL Analytes: PB										
				10/28/2009		PMOIST					df - met
0910474-002A	3C-12"	10/26/2009 2:00:00 PM		10/28/2009		3051A-ICPMS-PR					df - met
	SEL Analytes: AS PB			10/28/2009		6010C-S			V		df - met
<u>, .</u>				10/28/2009		PMOIST					df - met
0910474-003A	503C-12"	10/26/2009 1:00:00 PM		10/28/2009		3051A-ICPMS-PR					df - met
	SEL Analytes: AS PB			10/28/2009		6010C-S			V		df - met
	6.00			10/28/2009		PMOIST					df - met
910474-004A	505H-12"	10/26/2009 3:10:00 PM		10/28/2009		3051A-ICPMS-PR					df - met
14.	SEL Analytes: AS PB			10/28/2009		6010C-S			V		df - met
	,			10/28/2009		PMOIST					df - met .
910474-005A	5H-12"	10/26/2009 4:00:00 PM		10/28/2009		3051A-ICPMS-PR					df - met
	SEL Analytes: AS PB			10/28/2009	, , , , , , , , , , , , , , , , , , , 	6010C-S			V		df - met
				10/28/2009	, , , , , , , , , , , , , , , , , , , ,	PMOIST					df - met
910474-006A	SDD-36	10/26/2009 5:00:00 PM		10/28/2009		3051A-ICPMS-PR					df - met
	SEL Analytes: PB			10/28/2009		6010C-S		Π.	Ø		df - met
				10/28/2009	ter.	PMOIST					df - met
910474-007A	SDD-31	10/26/2009 4:30:00 PM		10/28/2009	·	3051A-ICPMS-PR	П				df - met

WORK ORDER Summary

28-Oct-09

Work Order: 0910474

WO Type: Standard

Client ID:

UNI100

Contact:

Kerry Gee

Project:

Richardson Flat

QC Level: LEVEL II+

Reviewed by Samantha Broadhead on 10/27/2009

Comments:

RMC client: Email copy of report to Todd Leeds; QC2+; Next Day Rush;

Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hld	MS	SEL	Sub	Storage
0910474-007A	SDD-31	10/26/2009 4:30:00 PM	10/27/2009, 3:33:25 PM	10/28/2009	Soil	6010C-S			$\overline{\mathbf{Z}}$		df - met
	SEL Analytes: PB	•					. —				
,				10/28/2009		PMOIST		П			df - met

American West Analytical Laboratories

WORK ORDER Summary

UNI100 Kerry Gee

Contact: Project:

Client ID:

Richardson Flat

QC Level: LEVEL II+

Comments:

RMC client: Email copy of report to Todd Leeds; QC2+; Next Day Rush;

27-Oct-09

Work Order: 0910474

WO Type: Standard

Reviewed by on

Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hld	MS	SEL	Sub	Storage
0910474-001A	SDD-3a	10/26/2009 3:00:00 PM	10/27/2009 3:33:25 PM	10/28/2009	Soil	3051A-ICPMS-PR					df - met
				10/28/2009	· ·	6010C-S			V		df - met
 	SEL Analytes: PB										
				10/28/2009		PMOIST					df - met
0910474-002A	3C-12"	10/26/2009 2:00:00 PM	_	10/28/2009		3051A-ICPMS-PR					df - met
		,		10/28/2009		6010C-S			V		df - met
	SEL Analytes: AS PB	· · · · · · · · · · · · · · · · · · ·						· ———			
	·	·		10/28/2009		PMOIST					df - met
0910474-003A	、 503C-12"	10/26/2009 1:00:00 PM		10/28/2009		3051A-ICPMS-PR					df - met
	,			10/28/2009		6010C-S			V		df-met
	SEL Analytes: AS PB		·							_	••
··· . · · · · · · · · · · · · · · · · ·			•	10/28/2009		PMOIST					df - met
)910474-004A	505H-12"	10/26/2009 3:10:00 PM		10/28/2009		3051A-ICPMS-PR					df - met
				10/28/2009		6010C-S			\checkmark		df - met
····	SEL Analytes: AS PB		<u> </u>				·				
				10/28/2009		PMOIST					df - met
)910474-005A	5H-12"	10/26/2009 4:00:00 PM		10/28/2009		3051A-ICPMS-PR					df - met
	•			10/28/2009		6010C-S			V		df - met
	SEL Analytes: AS PB									_ ·	
	· · · · · · · · · · · · · · · · · · ·			10/28/2009		PMOIST					df - met
910474-006A	SDD-36	10/26/2009 5:00:00 PM .		10/28/2009		3051A-ICPMS-PR					df - met
	•			10/28/2009		6010C-S			Ø		df - met
	SEL Analytes: PB	·									
	•			10/28/2009	-	PMOIST			. 🔲		df - met

WORK ORDER Summary

27-Oct-09

Work Order: 0910474

WO Type: Standard

Client ID:

UNI100

Contact:

Kerry Gee

Project:

Richardson Flat

QC Level: LEVEL ||+

Comments:

RMC client: Email copy of report to Todd Leeds; QC2+; Next Day Rush;

Reviewed by on

Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hid	MS	SEL	Sub	Storage
0910474-007A	SDD-31	10/26/2009 4:30:00 PM	10/27/2009 3:33:25 PM	10/28/2009	.Soil	3051A-ICPMS-PR					df - met
				10/28/2009		6010C-S			V		df - met
	SEL Analytes: PB	· .				·.					•
				10/28/2009		PMOIST					df - met

RMC

Laboratory Services Request Form

0910474

I. CLIENT IN	FORMATION						SEND REQUESTS	TO:
Client Nam	ne:	UNITED PARK	CITY MINES				American West	
		PO BOX 1450		Г 84060			Analytical Labora	tories
							463 W. 3600 South	1
Client Pho	ne:	435-608-0954					Salt Lake City, l	ΤL
Client Fax:	:	435-615-1239	,				84115	
II. ACCOUN	IT.INFORMATI	ON	1					
Account N	ame:						Patrick Noteboom	
Sample Q	uestions-	Todd Leeds	RMC-801-255	-2626			Phone # (801) 750	-2585
	1 110						Fax (801)-263-868	7
TAT:	19- F	70167		P.O. No:	Richardso	n Flat		
III. REPORT	T INSTRUCTIO	NS_				9.5		
				ODD LEEDS - RI	MC FAX-255	-3266		
Report Ad	dress:	PO BOX 1450 PA	RK CITY UT 84060	AND TODD LEEDS,	RMC, 8138 S.	STATE ST., STE	2A, MIDVALE UT 8404	7
Please Fo	rward Results I	Зу:	US Mail (X)	Fed Ex ()	Fax (X) Othe	erTodd@r <u>mc-ut.com</u>	
Services F	Requested belo	w are required	no later than				(date)	
IV. TYPE O	F SERVICE RE	QUESTED					r variante de la companya de la comp La companya de la co	, -
		ed environmen						
Lab Use				Sampling	No.	•		
Only		Field Sample		Date & Time	of		Analysis	
Lab No.		No./Description	n		Cont.		Requested	
	500 -3	39 1	10/26/09	3pm		Pb		
	3C-19			2 pm		PP-49	-s	
	503C	-15 11		Ipm				
		1-1211		3.10pm				
		17 n'		4.00				
		2-36		Spm		Pb.	ه .	
	SD	10-31		4.30 pi	~ 1	Pb	····	
·			·	,				
							···	
			0.0008 ppm, all	detection limits	should be as	low as pratic	oal.	
V. CHAIN C	OF CUSTODY	RECORD					T	<u> </u>
Dispatched I	by:			Date	Time		Courier Co. Name	
Relinquished	d by:	14	•	Date Out -	Time רע	5, 20	Airbiii #	
	/1	1		10/27/0	d la	520	7 .	
Received by				> Date 1 0	Time /5	· W	Custody Seal Intact?	*
Received for	rtab by:			Date	Time		Yes	Na

Lab Set ID: ___

Samples Were:	<u> </u>		COC Tar					Container !					N	o. Rec.	
☐ Shipped By:				nt on Ou				DAWAL S	ipplied P	lastic					
Hand Delivered			D Ye	s 🗹 N	lo DN	/A	[O AWAL St	ipplied C	lear Gla	SS				2.70
□ Ambient		·	Unbro	ken on O			I	AWAL S	ipplied A	mber G	lass				
Chilled			□ Ye	s DN	o EN	/A	[O AWAL S	upplied \	OA/TO	C/TOX	Vials			,
Temperature	11.2 ℃		Pı	esent on	Sample	;		☐ Amber ☐	Clear [Headspa	ce 🛮 No	Headspa	ice		_
Rec. Broken/Leak	ing DYes ZNo	DN/A	□Ye	s Div	O ON	/A	Γ	□ Non AWA	L Suppl	ed Cont	ainer	,			
Notes:			Unl	oroken o	n Samp]	e		Notes:	``	1900					
			ДΥ	s DN	O ZN	/A	}	:		***/		•			
Properly Preserve	d BYes DNo	□ N/A	Notes:		•										
Notes:			1		;		ı	•		•			•		
			<u> </u>				L					-			
Rec. Within Hold	☑Yes □No	• :						Discrepance	es Betw	een Lab	els and (COC		Yes	Z No
Notes:	- · · · · · · · · · · · · · · · · · · ·					•	П	Notes:		•					
·	•				•		.		٠		. :	•		٠.,	
							1					:			
L			ļ	· • · · · ·	 		ــــــــــــــــــــــــــــــــــــــ	 	<u> </u>	<u> </u>	 		· :: ·		
Bottle Type	Preservative	Allette Ov		i	,	· .	, 			 :		T	····		T
Ammonia	pH <2 H ₂ SO ₄	All pHs OX		 .			├	- 			7				
COD	pH <2 H ₂ SO ₄	 	- 	 	 	-	 		<u> </u>	'	-	 	 	 	
Cyanide	PH > 12 NaOH	\		 		 	-		-				1	 	
Metals	pH<2HNO ₃	1				-	<u> </u>	- 				1			
NO ₂ & NO ₃	pH <2 H ₂ SO ₄	·	abla	.	1									1	1
Nutrients	pH <2 H ₂ SO ₄														
0&G	pH <2 HCL	1	7	4.5							1		•		
Phenols	pH <2 H₂SO₄	, ,		•			:								1
Sulfide	pH > 9NaOH, ZnAC					·									
TKN	pH <2 H₂SO₄		1./.										• .	<u> </u>	
TOC	pH <2 H₃PO₄						<u> </u>	• •				<u> </u>		<u> </u>	· .
TPO ₄	pH <2 H₂SO₄														
TPH	pH <2 HCL			Λ		1	<u>Ľ</u>					<u> </u>		<u> </u>	
,							<u> </u>						•		
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				7	C										
				<u> </u>	1.71/		<u>L</u> .,	<u> </u>	<u></u>		<u> </u>	<u> </u>	<u> </u>	<u>L. </u>	نيل
Procedure: 1		int of sample in the sam Lid gently over wide ran		٠.٠٠.					•	•	٠		: :		
3		namer in the sample ho		•									•		

If sample is not preserved properly list its extension and receiving pH in the appropriate column above Flag COC and notify client for further instructions Place client conversation on COC Samples may be adjusted at client request

5) 5) 6) 7)



Kerry Gee

AMERICAN United Park City Mines Co.

WEST

PO Box 1450

ANALYTICAL **LABORATORIES**

Park City, UT 84060-

TEL: (435) 608-0954 FAX (435) 615-1239

RE: Richardson Flat

463 West 3600 South Salt Lake City, Utah 84115

Dear Kerry Gee:

Lab Set ID: 0908555

American West Analytical Laboratories received 4 sample(s) on 8/28/2009 for the analyses presented in the following report.

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com All analyses were performed in accordance to The NELAC Institute protocols unless noted otherwise. American West Analytical Laboratories is certified by The NELAC Institute in the following states: Utah, Colorado, Idaho, and Texas, Certification document is available upon request. If you have any questions or concerns regarding this report please feel free to call.

Kyle F. Gross Laboratory Director The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitaion limit (POL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit.

Jose Rocha QA Officer

Thank You.

Approved by:

Jose 6. Kocha

Laboratory Director or designee



Client: Project:

Lead

United Park City Mines Co.

mg/filter

Contact: Kerry Gee

Limit

0.0025

AMERICAN

Lab Sample ID:

WEST

Richardson Flat 0908555-001

Collection Date:

Client Sample ID: RF-Up-8/27/09-585L

ANALYTICAL **LABORATORIES** 8/27/2009 8/28/2009

TOTAL METALS

Method

Reporting Analytical

Result

< 0.0025

Analytical Results

Received Date:

Units Date Analyzed

9/2/2009 6:33:00 PM

Used SW6010C Qual

463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross **Laboratory Director**

> > Jose Rocha **QA** Officer

> > > Report Date: 9/14/2009 Page 2 of 8



Date Analyzed

9/2/2009 6:37:00 PM

Client:

United Park City Mines Co.

Units

mg/filter

Contact: Kerry Gee

Project:

Lead

Richardson Flat

AMERICAN

0908555-002 Lab Sample ID:

WEST

Client Sample ID: RF-Dn-8/27/09-648L

ANALYTICAL

8/27/2009

LABORATORIES

8/28/2009

TOTAL METALS	TO	TA	I.	M	FТ	١A	T	2
--------------	----	----	----	---	----	----	---	---

Analytical Results

Collection Date:

Received Date:

Method Reporting Analytical Used Limit Result Qual SW6010C

< 0.0025

0.0025

463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross **Laboratory Director**

> > Jose Rocha **QA** Officer

> > > Report Date: 9/14/2009 Page 3 of 8



Client: Project: United Park City Mines Co.

mg/filter

Contact: Kerry Gee

AMERICAN

Lab Sample ID:

Richardson Flat 0908555-003

WEST **ANALYTICAL** Client Sample ID: RF-Hoe-8/27/09-561L

Collection Date: Received Date:

Lead

8/27/2009

LABORATORIES

8/28/2009

TOTAL METALS

Method

Reporting

Analytical

Result

Analytical Results

Units Date Analyzed

9/2/2009 6:41:00 PM

Used SW6010C

Limit 0.0025

< 0.0025

Qual

463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Jose Rocha **QA** Officer

> > > Report Date: 9/14/2009 Page 4 of 8



Client: Project:

Lead

United Park City Mines Co.

Contact: Kerry Gee

AMERICAN

WEST

Lab Sample ID: 0908555-004

Client Sample ID: RF-Am-8/27/09-573L

Richardson Flat

ANALYTICAL

Collection Date: LABORATORIES Received Date:

8/27/2009

Analytical Results

8/28/2009

TOTAL METALS

Method

Reporting

0.0025

Analytical

< 0.0025

9/2/2009 6:44:00 PM

Units mg/filter

Used **Date Analyzed**

SW6010C

Limit Result

Qual

463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross **Laboratory Director**

> > Jose Rocha QA Officer

> > > Report Date: 9/14/2009 Page 5 of 8



463 West 3600 South
Salt Lake City, Utah 84115
(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687
e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0908555

Project: Richardson Flat

Dept: ME SampType: LCS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
LCS-2824	Lead	mg/kg	SW6010C	20	20.00	0	99.0	75-125	-		9/2/2009

Report Date: 9/14/2009 Page 6 of 8



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0908555

Project: Richardson Flat

Dept: ME

SampType: LCSD

Sample ID	Analyte	Units	Method	Result	Amount Original alt Spiked Amount %REC		Limits	%RPD	RPD Limit Qualifiers	Analysis Date	
LCSD-2824	Lead	mg/kg	SW6010C	21	20.00	0	104	75-125	5.12	20	9/2/2009

Insufficient sample mass/volume was received to perform MS/MSD analysis. An LCSD was added to provide prescision data.

Report Date: 9/14/2009 Page 7 of 8



463 West 3600 South
Salt Lake City, Utah 84115
(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687
e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0908555

Project: Richardson Flat

Dept: ME

SampType: MBLK

Sample ID	Analyte	Ünits	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
MB-2824	Lead	mg/kg	SW6010C	< 5.0							9/2/2009

Report Date: 9/14/2009 Page 8 of 8

American West Analytical Laboratories

RMC client; QC2+ / email 2 people;

WORK ORDER Summary

28-Aug-09 Work Order: 0908555

Client ID:

UNI100

Contact:

Kerry Gee

Project: Comments: Richardson Flat

QC Level: LEVEL II+

Reviewed by on.

WO Type: Standard

Comments:	RMC client; QC2+ / em	nail 2 people;	Hek						થ	A		
Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hid	MS	SEL	Sub	Storage	Ţ
0908555-001A	RF-Up-8/27/09-585L	8/27/2009	8/28/2009 11:30:19 AM	9/14/2009	Filter	3051A-ICPMS-PR					desicator	-
	•		•	9/14/2009		6010C-S			V		desicator	-
0908555-002A	RF-Dn-8/27/09-648L			9/14/2009		3051A-ICPMS-PR					desicator	-
				9/14/2009		6010C-S			V		desicator	-
0908555-003A	RF-Hoe-8/27/09-561L			9/14/2009	`	3051A-ICPMS-PR					desicator	-
				9/14/2009	<u> </u>	6010C-S			V		desicator	-
0908555-004A	RF-Am-8/27/09-573L			9/14/2009		3051A-ICPMS-PR					desicator	-
				9/14/2009		6010C-S			Ø		desicator	-

27.

RMC

Laboratory Services Request Form

0908222

Client Name: UNITED PARK CITY MINES American West Analytical Laboratories
Client Address: PO BOX 1450 PARK CITY, UT 84060 Analytical Laboratories 463 W. 3600 South Salt Lake City, UT 84115 84115 II. ACCOUNT INFORMATION Account Name: Patrick Noteboom Sample Questions Todd Leeds RMC-801-255-2626 TAT: Standard P.O. No: Richardson Flat III. REPORT INSTRUCTIONS Report Results To: KERRY GEE- UPCM AND TODD LEEDS - RMC FAX-255-3266 Report Address: PO BOX 1450 PARK CITY UT 84080 AND TODD LEEDS, RMC, 8138 S. STATE ST., STE 2A, MIDVALE UT 84047 Please Forward Results By: US Mail (X) Fed Ex () Fax (X) OtherTodd@rmc-ut.com Services Requested below are required no later than (date) IV. TYPE OF SERVICE REQUESTED Please analyze the enclosed environmental samples for: Lab Use Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested F- DA - 8(27) 04 - 64 & L
A63 W. 3600 South Salt Lake City, UT
Client Phone: 435-608-0954 Client Fax: 435-615-1239 II. ACCOUNT INFORMATION Account Name: Patrick Noteboom Sample Questions Todd Leeds RMC-801-255-2626 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Ford and Phone # (801) 750-2585 Fax (801)-263-8687 Phone # (801) 750-2585
ACCOUNT INFORMATION
II. ACCOUNT INFORMATION Account Name: Sample Questions- Todd Leeds RMC-801-255-2626 TAT: Strond and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: III. REPORT INSTRUCTIONS Report Results To: KERRY GEE- UPCM AND TODD LEEDS - RMC FAX-255-3266 Report Address: PO BOX 1450 PARK CITY UT 84080 AND TODD LEEDS, RMC, 8138 S. STATE ST., STE 2A, MIDVALE UT 84047 Please Forward Results By: US Mail (X) Fed Ex () Fax (X) Other Todd@rmc-ut.com Services Requested below are regulred no later than (date) IV. TYPE OF SERVICE REQUESTED Please analyze the enclosed environmental samples for: Lab Use Only Field Sample Date & Time of Analysis Cont. Requested Cf- UP - (3) 77 0 9 - 5 85 L 6) 77 69 1 lead Cf- UP - (3) 77 0 9 - 5 85 L 6) 77 69 1 lead
Account Name: Sample Questions Todd Leeds RMC- 801-255-2626 TAT: Stand and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Stand and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Stand and Phone # (801) 750-2585 Fax (801)-263-8687 P.O. No: Richardson Flat III. REPORT INSTRUCTIONS Report Results To: KERRY GEE- UPCM AND TODD LEEDS - RMC FAX-256-3286 Report Address: PO BOX 1450 PARK CITY UT 84080 AND TODD LEEDS, RMC, 8138 S. STATE ST., STE 2A, MIDVALE UT 84047 Please Forward Results By: US Mail (X) Fed Ex () Fax (X) Other Todd@rmc-ut.com Services Requested below are required no later than (date) IV. TYPE OF SERVICE REQUESTED Please analyze the enclosed environmental samples for: Lab Use Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested The DN - 8127104 - 5851 6127/69 1 lead
Account Name: Sample Questions Todd Leeds RMC- 801-255-2626 TAT: Stand and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Stand and Phone # (801) 750-2585 Fax (801)-263-8687 TAT: Stand and Phone # (801) 750-2585 Fax (801)-263-8687 P.O. No: Richardson Flat III. REPORT INSTRUCTIONS Report Results To: KERRY GEE- UPCM AND TODD LEEDS - RMC FAX-256-3286 Report Address: PO BOX 1450 PARK CITY UT 84080 AND TODD LEEDS, RMC, 8138 S. STATE ST., STE 2A, MIDVALE UT 84047 Please Forward Results By: US Mail (X) Fed Ex () Fax (X) Other Todd@rmc-ut.com Services Requested below are required no later than (date) IV. TYPE OF SERVICE REQUESTED Please analyze the enclosed environmental samples for: Lab Use Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested The DN - 8127104 - 5851 6127/69 1 lead
TAT: Standard P.O. No: Richardson Flat III. REPORT INSTRUCTIONS Report Results To: KERRY GEE- UPCM AND TODD LEEDS - RMC FAX-255-3286 Report Address: PO BOX 1450 PARK CITY UT 84080 AND TODD LEEDS, RMC, 8138 S. STATE ST., STE 2A, MIDVALE UT 84047 Please Forward Results By: US Mail (X) Fed Ex () Fax (X) Other Todd@rmc-ut.com Services Requested below are required no later than (date) IV. TYPE OF SERVICE REQUESTED Please analyze the enclosed environmental samples for: Lab Use Sampling No. Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested THE UP - \$127104 - 545L \$127169 1 lead THE UP - \$127104 - 644L
TAT: Standard P.O. No: Richardson Flat III. REPORT INSTRUCTIONS Report Results To: KERRY GEE- UPCM AND TODD LEEDS - RMC FAX-255-3268 Report Address: PO BOX 1450 PARK CITY UT \$4080 AND TODD LEEDS, RMC, 8138 S. STATE ST., STE 2A, MIDVALE UT 84047 Please Forward Results By: US Mail (X) Fed Ex () Fax (X) Other Todd@rmc-ut.com Services Requested below are required no. later than (date) IV. TYPE OF SERVICE REQUESTED Please analyze the enclosed environmental samples for: Lab Use Sampling No. Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested The Up - 6127104 - 5851 6127/69 1 lead The Up - 6127104 - 6461
Report Results To: KERRY GEE- UPCM AND TODD LEEDS - RMC FAX-255-3266 Report Address: PO BOX 1450 PARK CITY UT 84080 AND TODD LEEDS, RMC, 8138 S. STATE ST., STE 2A, MIDVALE UT 84047 Please Forward Results By: US Mail (X) Fed Ex () Fax (X) Other Todd@rmc-ut.com Services Requested below are required no later than (date) IV. TYPE OF SERVICE REQUESTED Please analyze the enclosed environmental samples for: Lab Use Sampling No. Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested THORY OF SERVICE REQUESTED I Lab No. No./Description Cont. Requested THORY OF SERVICE REQUESTED I Lab No. No./Description Laber & Time of Analysis Requested THORY OF SERVICE REQUESTED I Lab No. No./Description Laber & Time of Analysis Requested
Report Results To: KERRY GEE- UPCM AND TODD LEEDS - RMC FAX-255-3266 Report Address: PO BOX 1450 PARK CITY UT 84080 AND TODD LEEDS, RMC, 8138 S. STATE.ST., STE 2A, MIDVALE:UT 84047 Please Forward Results By: US Mail (X) Fed Ex () Fax (X) OtherTodd@rmc-ut.com Services Requested below are required no later than (date) IV. TYPE OF SERVICE REQUESTED Please analyze the enclosed environmental samples for: Lab Use Sampling No. Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested The Up - 6127169 - 5851 6127/69 1 lead The Up - 6127169 - 6461 1 lead
Report Address: PO BOX 1450 PARK CITY UT 84080 AND TODD LEEDS, RMC, 8138 S. STATE ST., STE 2A, MIDVALE:UT 84047 Please Forward Results By: US Mail (X) Fed Ex () Fax (X) OtherTodd@rmc-ut.com Services Requested below are required no later than (date) IV. TYPE OF SERVICE REQUESTED Please analyze the enclosed environmental samples for: Lab Use Sampling No. Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested PF-UP-8127164-585L 6127/69 1 lead PF-DN-8127104-6446L
Report Address: PO BOX 1450 PARK CITY UT 84080 AND TODD LEEDS, RMC, 8138 S. STATE ST., STE 2A, MIDVALE:UT 84047 Please Forward Results By: US Mail (X) Fed Ex () Fax (X) OtherTodd@rmc-ut.com Services Requested below are required no later than (date) IV. TYPE OF SERVICE REQUESTED Please analyze the enclosed environmental samples for: Lab Use Sampling No. Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested PF-UP-8127164-585L 6127/69 1 lead PF-DN-8127104-6446L
Services Requested below are required no later than IV. TYPE OF SERVICE REQUESTED Please analyze the enclosed environmental samples for: Lab Use Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested The DN - 8127104 - 5851 6127/69 1 lead The DN - 8127104 - 6481 1 lead
Services Requested below are required no later than IV. TYPE OF SERVICE REQUESTED Please analyze the enclosed environmental samples for: Lab Use Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested The DN - 8127104 - 5851 6127/69 1 lead The DN - 8127104 - 6481 1 lead
Please analyze the enclosed environmental samples for: Lab Use Sampling No. Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested
Please analyze the enclosed environmental samples for: Lab Use Sampling No. Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested
Only Field Sample Date & Time of Analysis Lab No. No./Description Cont. Requested Cont. Requested Print No./Description 1 Image: Cont. Requested Image: Cont. Image: Cont. No./Description Image: Cont. Image: Cont. Requested Image: Cont. Image: Cont. Image: Con
Lab No. No./Description Cont. Requested rf-up-8127/69 - 585L 8127/69 1 lead rf-DN-8127/09 - 648L 1 1 1
rf-up-8127104-585L 8127/69 1 lead rf-DN-8127104-648L 1 1
rf-up-8127104-585L 8127/69 1 lead rf-DN-8127104-648L 1 1
rf-BN-8127104-648L
rf-hoe-8127109-561 L &f-An-8127109-573 L
8 F-Am - 8/27/09 - 573 L V V
notes: Cd detection limits must be <0.0008 ppm
V. CHAIN OF CUSTODY RECORD
Dispatched by: Date Time Courier Co. Name
Relinquished by: Date 81.2800 Time 11:18 Airbill#
Received by: Class Date \$/28/100 Time ///8 Custody Seal Intact?
Received for lab by: Date Time Yes No

Lab Set ID: 0908 5.	55
---------------------	----

Samples Were:			COC Tar	e Was:			•	Container	Type:				N	o. Rec.	
☐ Shipped By:			Prese	at on Ou	ter Pack	age	٦	DAWAL S	upplied I	Plastic					
Hand Delivered			\o Ye	s ON	io DN	Ά		DAWALS	upplied (Clear Gl	ass				
Ambient			Unbrol	cen on O	uter pac	kage		□ AWAL S	upplied A	Amber C	lass			-,	
☐ Chilled			l ox	s 🗆 N	o DN/	Ά.	Γ	D AWAL S	upplied \	VOAZTO	C/TOX	Vials			
Temperature	27 °C		Pr	esent on	Sample			☐ Amber ☐	Clear 🗆	Headsp	ase 🗆 No	Headsp	ace		
Rec. Broken/Leak	ing OYes ANO ON/A		l □ Ye		lo DN/		Ī	□ Non AW.							· ·
Notes:	• .	•			n Sampl			Notes:		· · ·		$\overline{}$			
			ΟYe				.					,			
Properly Preserve	d ATYes No N/A		Notes:		/					·					
Notes:	7				\].	•				•			
					\ .		1							. `	
Rec. Within Hold	XÍYes □ No			•			Γ	Discrepand	ies Betw	een Lat	els and	COC	. 0	Yes	₽No
Notes:					. \		-	Notes:	•						~
				• .			ł		, ·		:			• .	
			· .			/				•		٠.	٠.		
<u> </u>									<u> </u>						
		·	· ·								<u> </u>	•		, :	·
Bottle Type	Preservative All pH			<u> </u>					<u> </u>	<u> </u>	ļ	<u> </u>			<u> </u>
Ammonia	pH <2 H ₂ SO ₄				<u> </u>		<u> </u>		<u> </u>	ļ ·:	1	ļ			ļ
COD	pH 2 H ₂ SO ₄				ļ		Ь.	·		<u> </u>			ļ	ļ .	1
Cyanide	PH>12 NaOH			ļ:									<u> </u>		
Metals	pH <2 HNO₃		<u> </u>		ļ	·	L.								ļi
NO ₂ & NO ₃	pH <2 H₂SO₄		<u> </u>	<u></u>					ļ	<u> </u>	<u> </u>			<u> </u>	<u> </u>
Nutrients	pH <2 H ₂ SO ₄			-		<u> </u>			<u> </u>	<u> </u>				<u> </u>	<u> </u>
0&0	pH <2 HCL			1										<u> </u>	<u> </u>
Phenois	pH <2 H ₂ SO ₄		· · ·											<u> </u>	1:
Sulfide	pH > 9NaOH, ZnAC	·											··	ļ	1
TKN	pH <2 H₂SO₄				<u> </u>		Ŀ			<u> </u>	<u> </u>	- 4.		<u> </u>	
TOC	pH <2 H ₃ PO ₄		<u> </u>		ļ		<u> </u>	·]			<u></u>			<u> </u>	1
T PO ₄	pH <2 H₂SO₄					·	_			,					
TPH	pH <2 HCL								<u> </u>	_			`	<u> </u>	<u> </u>
					ļ		<u> </u>			ļ:	1			<u> </u>	1
······································									<u> </u>	·	<u> </u>				
				<u> </u>						<u> </u>	• • •		ļ <u>.</u>	<u> </u>	
		<u> </u>		<u> </u>			<u> </u>	<u> </u>	<u> </u>	L		<u> </u>	<u> </u>	<u> </u>	لـــــا
) Pour a small amount of samp	e in the sam	ple (id	٠.٠	;										
2		ver wide ran	ge pri paper			•			*			٠.			

If sample is not preserved properly list its extension and receiving pH in the appropriate column above Flag COC and notify client for further instructions

Place client conversation on COC Samples may be adjusted at client request

3) 4) 5) 6) 7)



AMPRICANT II

Kerry Gee

WEST ANALYTICAL LABORATORIES

AMERICAN United Park City Mines Co.

PO Box 1450

Park City, UT 84060-

TEL: (435) 608-0954 FAX (435) 615-1239

RE: Richardson Flat

463 West 3600 South Salt Lake City, Utah

Dear Kerry Gee:

Lab Set ID: 0908555

84115
American West Analytical Laboratories received 4 sample(s) on 8/28/2009 for the analyses

All analyses were performed in accordance to The NELAC Institute protocols unless noted otherwise. A merican West Analytical Laboratories is certified by The NELAC

(801).263-8686 Toll Free (888).263-8686 Fax (801).263-8687 >-mail: awal@awal-labs.com noted otherwise. American West Analytical Laboratories is certified by The NELAC Institute in the following states: Utah, Colorado, Idaho, and Texas. Certification document is available upon request. If you have any questions or concerns regarding this report please feel free to call.

Kyle F. Gross Laboratory Director

> Jose Rocha QA Officer

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitation limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit.

This is a revised report for a report originally issued on 9/14/2009. By client request, samples were re-analyzed by method SW6020A.

Thank You,

Approved by:

Laboratory Director or designee

Report Date: 10/5/2009 Page 1 of 8



Client:

United Park City Mines Co.

Units

Contact: Kerry Gee

Limit

Project:

Richardson Flat

AMERICAN

Lab Sample ID:

0908555-001

WEST

Client Sample ID: RF-Up-8/27/09-585L

ANALYTICAL LABORATORIES 8/27/2009

Received Date:

Collection Date: 8/28/2009

TOTAL METALS

Analytical Results

previously issued reports.

Method Used

Reporting Analytical

Result Qual

463 West 3600 South Salt Lake City, Utah

84115

mg/filter 10/1/2009 4:34:12 PM SW6020A 0.00033 < 0.00033 Lead ^ - Reissue of a previously generated report. Information has been added, updated, or revised. Information herein supersedes that of the

Date Analyzed

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Jose Rocha **QA** Officer

> > > Report Date: 10/5/2009 Page 2 of 8



Date Analyzed

10/1/2009 4:51:35 PM

Client: Project:

Lead

United Park City Mines Co.

Units

mg/filter

Contact: Kerry Gee

Limit

AMERICAN

Lab Sample ID:

Richardson Flat 0908555-002

WEST

ANALYTICAL

Client Sample ID: RF-Dn-8/27/09-648L

Collection Date: Received Date:

8/27/2009

LABORATORIES

8/28/2009

TOTAL METALS

Analytical Results

previously issued reports.

Method Used

SW6020A

Reporting Analytical

Result Qual

463 West 3600 South Salt Lake City, Utah 84115

0.00033 < 0.00033 ^- Reissue of a previously generated report. Information has been added, updated, or revised. Information herein supersedes that of the

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 mail: awal@awal-labs.com

> Kyle F. Gross **Laboratory Director**

> > Jose Rocha **QA Officer**

> > > Report Date: 10/5/2009 Page 3 of 8



Client:

Lead

United Park City Mines Co.

Contact: Kerry Gee

Project:

Lab Sample ID:

Richardson Flat

AMERICAN

0908555-003

WEST

Client Sample ID: RF-Hoc-8/27/09-561L

ANALYTICAL **LABORATORIES**

8/27/2009

Collection Date: 8/28/2009 Received Date:

TOTAL METALS

Analytical Results

Method Reporting Analytical

Units

mg/filter

Date Analyzed

Used

Limit

Result Qual

463 West 3600 South

10/1/2009 4:57:23 PM

SW6020A

0.00033

0.00038

Salt Lake City, Utah ^ - Reissue of a previously generated report. Information has been added, updated, or revised, information herein supersedes that of the 84115 previously issued reports.

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross **Laboratory Director**

> > Jose Rocha **QA** Officer

> > > Report Date: 10/5/2009 Page 4 of 8



Client:

United Park City Mines Co.

Contact: Kerry Gee

AMERICAN

Project: Lab Sample ID: Richardson Flat

WEST

0908555-004

ANALYTICAL LABORATORIES

Client Sample ID: RF-Am-8/27/09-573L

8/27/2009 Collection Date:

Received Date:

8/28/2009

TOTAL METALS

Method Used

Reporting Analytical

Result

Analytical Results

Lead

Units mg/filter

Date Analyzed 10/1/2009 5:03:11 PM

SW6020A

0.00033

Limit

< 0.00033

Qual

463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686 Toll Free (888) 263-8686

Fax (801) 263-8687 -mail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Jose Rocha **QA Officer**

> > > Report Date: 10/5/2009 Page 5 of 8

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. This report is provided for the exclusive use of the addresses. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addresses will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0908555

Project: Richardson Flat

Dept: ME

SampType: LCS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD RPD Limit Qua	Analysis lifiers Date
LCS-2824	Lead	mg/kg	SW6020A	20	20.00	0	99.5	85-115		10/1/2009

Report Date: 10/5/2009 Page 6 of 8



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha OA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0908555

Project: Richardson Flat

Dept: ME

SampType: LCSD

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
LCSD-2824	Lead	mg/kg	SW6020A	20	20.00	0	101	85-115	1.54	20	10/1/2009

Insufficient sample mass/volume was received to perform MS/MSD analysis. An LCSD was added to provide prescision data.

Report Date: 10/5/2009 Page 7 of 8



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0908555

Project: Richardson Flat

Dept: ME

SampType: MBLK

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount %REC Limits		%RPD	RPD Limit Qualifiers	Analysis Date	
MB-2824	Lead	mg/kg	SW6020A	< 0.65				-			10/1/2009

Report Date: 10/5/2009 Page 8 of 8

American West Analytical Laboratories

WORK ORDER Summary

Client ID:

UNI100

Contact:

Kerry Gee

Project:

Richardson Flat

QC Level: LEVEL II+

Comments: RMC client; QC2+ / email 2 people. Metals by 6020 added 10/1/09-RW;

REVISED

01-Oct-09

Work Order: 0908555

WO Type: Standard

by method 6020 Reviewed by Samantha Broadhead on 8/28/2009

Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hld	MS	SEL	Sub	Storage
0908555-001A	RF-Up-8/27/09-585L	8/27/2009	8/28/2009 11:30:19 AM	9/14/2009	Filter	3051A-ICPMS-PR					desicator
		•		9/14/2009		6010C-S		П	\square	П	desicator
	SEL Analytes: PB	•									
				9/14/2009		6020-S			V		desicator
· · · · · · · · · · · · · · · · · · ·	SEL Analytes: PB										
0908555-002A	RF-Dn-8/27/09-648L			9/14/2009		3051A-ICPMS-PR					desicator
			,	9/14/2009	To the state of th	6010C-S	П		\square		desicator
	SEL Analytes: PB					<u> </u>					
				9/14/2009		6020-S			V		desicator
	SEL Analytes: PB										
0908555-003A	RF-Hoc-8/27/09-561L	•	•	9/14/2009		3051A-ICPMS-PR					desicator
				9/14/2009		6010C-S			V		desicator .
	SEL Analytes: PB	•									
		, ,		9/14/2009		6020-S			\mathbf{V}		desicator
	SEL Analytes: PB					· · · · · · · · · · · · · · · · · · ·					
0908555-004A	RF-Am-8/27/09-573L			9/14/2009		3051A-ICPMS-PR					desicator
				9/14/2009		6010C-S	П		Ø		desicator
	SEL Analytes: PB									·	
				9/14/2009		6020-S			V		desicator
	SEL Analytes: PB						_			_	•

American West Analytical Laboratories

WORK (ORDER Summar	y						28-A1	••		er: 0908	EEE
Client ID:	UNI100				•		•				e: Stand	
Contact:	Kerry Gee											
Project:	Richardson Flat		QC Level: LE	/EL II+							Reviewed	by on
Comments:	RMC client; QC2+/en	nail 2 people;	. Hak	Sho DB			•				. :.	الغ
Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hld	MS	SEL	Sub	Storage	
0908555-001A	RF-Up-8/27/09-585L	8/27/2009	8/28/2009 11:30:19 AM	9/14/2009	Filter	3051A-ICPMS-PR					desicator	
***				9/14/2009		6010C-S			Ø		desicator	
0908555-002A	RF-Dn-8/27/09-648L			9/14/2009		3051A-ICPMS-PR					desicator	
				9/14/2009		6010C-S			Ø		desicator	
AE00-5528090	RF-Hoe-8/27/09-561L			9/14/2009		3051A-ICPMS-PR					desicator	
				9/14/2009		6010C-S			Ø		desicator	
)908555-004A	RF-Am-8/27/09-573L			9/14/2009		3051A-ICPMS-PR					desicator	
······		· · · · · · · · · · · · · · · · · · ·		9/14/2009		6010C-S			\square		desicator	

27.

RMC

Laboratory Services Request Form

0908222

		· · · · · · · · · · · · · · · · · · ·		21/4
I. CLIENT INFORMA	TION			SEND REQUESTS TO:
Client Name:	UNITED PARK CITY MIN		American West	
Client Address:	PO BOX 1450 PARK CIT	Y, UT 84060		Analytical Laboratories
				463 W. 3600 South
Client Phone:	Salt Lake City, UT			
Client Fax:	435-615-1239			84115
II. ACCOUNT INFOR	RMATION			· · · · · · · · · · · · · · · · · · ·
Account Name:				Patrick Noteboom
Sample Questions	s- Todd Leeds RMC-80	1-255-2626		Phone # (801) 750-2585
a 1	1	_		Fax (801)-263-8687
TAT: Sta	ndard	P.O. No:	Richardson Fla	<u>t</u>
III. REPORT INSTRI	UCTIONS			
Report Results To:	KERRY GEE- UPCM A	ND TODD LEEDS - F	RMC FAX-255-3266	
Report Address:	PO BOX 1450 PARK CITY UT	84060 AND TODD LEEDS	S, RMC, 8138 S. STATE	ST., STE 2A, MIDVALE UT 84047
Please Forward Re	esults By: US Mail	(X) Fed Ex (Fax (X)	OtherTodd@rmc-ut.com
Services Requeste	ed below are required no later th	an		(date)
IV, TYPE OF SERV	ICE REQUESTED			
· · · · · · · · · · · · · · · · · · ·	enclosed environmental sample			
Lab Use		Sampling	No.	
Only	Field Sample	Date & Time	of	Analysis
Lab No.	No./Description		Cont.	Requested
	2P-8127109-585L	8127/69	1 lead	
	BN-8127104-648L			· · · · · · · · · · · · · · · · · · ·
rt.	-hoe-8127/69-5611			
84	-An - 8127109 - 573	3L V	V	
	·	<u>.</u>		
	·			
			_11	
notes: Cd dete	ection limits must be <0.0008 pp	i m 18 17393 - 243 -		
V. CHAIN OF CUS	TODY RECORD			
Dispatched by:	1	Date	Time	Courier Co. Name
Relinquished by:	114	Date 8/29	UCI Time	Airbiil#
Received by:	in Obre	Date 8/28/	Time ///8	Custody Seal Intact?
Received for lab by:	714	Date	Time	Yes No
	·			1

Lab Set ID:	0908555	

Samples Were:			COC	COC Tape Was:				Container	. 1	No. Rec.					
☐ Shipped By:				Present on Outer Package				DAWAL S		Plastic					
Mand Delivered				☐ Yes ☐ No ☐ N/A				☐ AWAL-Supplied Clear Glass							
Ambient				Unbroken on Outer package			1	□ AWAL Supplied Amber Glass							
Chilled				DYes DNo DNA				☐ AWAL Supplied VOA/FOC/TOX Vials						•	
Temperature 27 °C				Present on Sample				☐ Amber ☐ Clear ☐ Headspace ☐ No Headspace							ļ
Rec. Broken/Leaking UYes ANO UN/A			┥	Yes DNo DNA				Non AWAL Supplied Container							
Notes:	AME CIAS AITO	DIVII		Unbroken on Sample				Notes:							
14otes:				☐ Yes ☐ No ☐ N/A			.	110125.						. <i>:</i>	
Properly Preserve	ed PYes INo	□N/A	Notes:		40 DY	V/A	$\overline{}$			•				•	,
Notes:	d tree min	DIVA	- 11043.	110113.			ľ								
110123.		•											• •		
Rec. Within Hold X Yes D No		7					Discrepancies Between Labels and COC						□ Yes PNo		
Notes:			7	•	`	· ·	—	Notes:		• .	•				7
	•		j .	•	•				· · ·		•			٠.]
			 .	·		<i>)</i> :		••			•	٠.	•		
1					<u>:</u> .		:L								
•							;	:				•	•• ••		
Bottle Type	Preservative	. All pHs OK						·	·		<u> L</u>			<u> </u>	<u> </u>
Ammonia	pH <2 H₂SO₄	·	• • • • • • •		1	Ι	_		L	•.:			<u> </u>		
COD	TH 2H,SO4					<u> </u>		`.		·	<u>[</u>		<u> </u>		
Cyanide	PH >12 NaOH		<u> </u>				· ·		<u> </u>		1	<u> </u>	<u> </u>	1	
Metals	pH <2 HNO₃			<u></u>	1	<u> </u>			· · :··				1		
NO ₂ & NO ₃ .	pH <2 H ₂ SO ₄			<u></u>		<u> </u>				·	1			<u> </u>	<u> </u>
Nutrients	pH <2 H ₂ SO ₄							-		• •					
0&0	pH <2 HCL		<u> </u>	- 7	—	<u> </u>								`	
Phenols	pH≪2 H ₂ SO ₄						L						1.	1	
Sulfide	pH > 9NaOH, ZnAC				1						<u> </u>		ļ		
TKN	pH <2 H₂SO₄				. ,		<u> </u>					·	<u> </u>		
TOC	pH <2 H₃PO₄			1:.			<u> </u>				<u> </u>				
T PO ₄	pH <2 H ₂ SO ₄					<u> </u>						·	<u> </u>		
TPH	pH <2 HCL							<u> ' </u>	· .						<u> </u>
· · · · · · · · · · · · · · · · · · ·			·	<u>.</u>					:		1				
· · · · · · · · · · · · · · · · · · ·			[.]	<u>·</u> [• • • •	· .				لـــــــا
											1.7.				
•															
Procedure: 1) Pour a small amour	nt of sample in the sa	mple lid								•		: .		
	Pour sample from L Do Not dip the pH p	id gently over wide re paper in the sample b	inge pH pap offie or lid	er	•	•			•	•		٠.	• •	•	
4) If sample is not prei	served properly list its	extension a	nd receiving	pH in the	appropriate	te colu	mn above	,	•		••	•		
5) Flag COC and notif	y client for further insi	ructions		. ,	14 sprawa	•	,		٠.					•
6,) Place client convers) Samples may be ad	et .	. •						·						
. 7) Samples may be ac	ilnareo ar cheur tedne	SI.												



Kerry Gee

United Park City Mines Co.

PO Box 1450

Park City, UT 84060-

TEL: (435) 608-0954 FAX (435) 615-1239

RE: Richardson Flat

463 West 3600 South Salt Lake City, Utah 84115

Dear Kerry Gee:

Lab Set ID: 0909160

American West Analytical Laboratories received 4 sample(s) on 9/9/2009 for the analyses presented in the following report.

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 -mail: awal@awal-labs.com All analyses were performed in accordance to The NELAC Institute protocols unless noted otherwise. American West Analytical Laboratories is certified by The NELAC Institute in the following states: Utah, Colorado, Idaho, and Texas. Certification document is available upon request. If you have any questions or concerns regarding this report please feel free to call.

Kyle F. Gross Laboratory Director

> Jose Rocha QA Officer

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitation limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit.

Thank You,

Approved by: Jose G. Rocha

Laboratory Director or designee

Report Date: 9/14/2009 Page 1 of 8



Date Analyzed

9/10/2009 6:04:00 PM

Client:

United Park City Mines Co.

Units

mg/filter

Contact: Kerry Gee

The street

Project: Lab Sample ID:

Collection Date:

Richardson Flat

AMERICAN

0909160-001

WEST

Client Sample ID: PS-Up (510 Liters)

ANALYTICAL LABORATORIES

9/9/2009

Received Date:

Lead

9/9/2009

TOTAL METALS

Analytical Results

Method Used

SW6010C

Reporting Limit

0.0025

Analytical Result

< 0.0025

Qual

463 West 3600 South

Salt Lake City, Utah 84115

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Jose Rocha QA Officer

> > > Report Date: 9/14/2009 Page 2 of 8



Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Plat

AMERICAN

0909160-002

WEST

Client Sample ID: PS-Down (477 Liters)

ANALYTICAL LABORATORIES 9/9/2009

Collection Date: Received Date:

Lab Sample ID:

9/9/2009

TOTAL METALS

Method

Analytical

Analytical Results

Units **Date Analyzed**

Reporting Used Limit

Result Qual

Lead

mg/filter

9/10/2009 6:08:00 PM

SW6010C

0.0025 < 0.0025

463 West 3600 South Salt Lake City, Utah 84115

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Fax (801) 263-8687

mail: awal@awal-labs.com

Kyle F. Gross Laboratory Director

> Jose Rocha QA Officer

> > Report Date: 9/14/2009 Page 3 of 8

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



Date Analyzed

9/10/2009 6:12:00 PM

Client:

United Park City Mines Co.

Units

mg/filter

Contact: Kerry Gee

0.0025

Project:

Lead

Richardson Flat

AMERICAN

0909160-003 Lab Sample ID:

WEST

Client Sample ID: PS-Hoe (452 Liters)

ANALYTICAL **LABORATORIES** 9/9/2009

Collection Date: Received Date:

9/9/2009

TOTAL METALS **Analytical Results**

Method

Used

SW6010C

Reporting Analytical Limit

< 0.0025

Result Qual

463 West 3600 South Salt Lake City, Utah

84115

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e-mail: awal@awal-labs.com

Kyle F. Gross **Laboratory Director**

> Jose Rocha **QA** Officer

> > Report Date: 9/14/2009 Page 4 of 8



Date Analyzed

9/10/2009 6:16:00 PM

Client:

United Park City Mines Co.

Units

mg/filter

Contact: Kerry Gee

SW6010C

Project:

Lead

Richardson Flat

AMERICAN

Lab Sample ID:

0909160-004

WEST

Client Sample ID: PS-Hand Truck (414 Liters)

ANALYTICAL LABORATORIES

9/9/2009

CAL Collection Date: RIES Received Date:

9/9/2009

TOTAL METALS	TO	TAI	ME'	PATS
--------------	----	-----	-----	------

Analytical Results

Method Reporting Analytical Used Limit Result Qual

< 0.0025

0.0025

463 West 3600 South Salt Lake City, Utah 84115

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> Kyle F. Gross Laboratory Director

> > Jose Rocha QA Officer

> > > Report Date: 9/14/2009 Page 5 of 8



463 West 3600 South Salt Lake City, Utah 84115

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e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0909160

Project: Richardson Flat

Dept: ME

SampType: LCS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	Analysi %RPD RPD Limit Qualifiers Date
LCS-2963	Lead	mg/kg	SW6010C	21	20.00	0	104	75-125	9/10/200

Report Date: 9/14/2009 Page 6 of 8



463 West 3600 South

Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687

e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0909160

Project: Richardson Flat

Dept: ME

SampType: LCSD

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
LCSD-2963	Lead	mg/kg	SW6010C	20	20.00	0	101	75-125	2.93	20	9/10/2009

Insufficient sample mass/volume was received to perform MS/MSD analysis. An LCSD was added to provide prescision data.



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0909160

Project: Richardson Flat

Dept: ME

SampType: MBLK

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
MB-2963	Lead	mg/kg	SW6010C	< 5.0				•			9/10/2009

Report Date: 9/14/2009 Page 8 of 8

American West Analytical Laboratories

-	-		
WO	RK	ORDER	Summary

09-Sep-09

Client ID: Un

UNI100

Work Order: 0909160

Contact:

Kerry Gee

WO Type: Standard

Project:

Richardson Flat

QC Level: LEVEL II+

Reviewed by on

Comments:

RMC client; QC2+; Email 2 People; Sample is a filter no pmoist;

Hal

				Hay						2	SID
Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hld	MS	SEL	Sub	Storage
0909160-001A	PS-Up (510 Liters)	9/9/2009	9/9/2009 3:30:47 PM	9/23/2009	Filter	3051A-ICPMS-PR					desicator sept 9 - met
				9/23/2009		6010C-S			V		desicator sept 9 - met
	SEL Analytes: PB										
0909160-002A	PS-Down (477 Liters)			9/23/2009		3051A-ICPMS-PR				Ü	desicator sept 9 - met
			· · · · · · · · · · · · · · · · · · ·	9/23/2009		6010C-S			V		desicator sept 9 - met
•	SEL Analytes: PB	,									
0909160-003A	PS-Hoe (452 Liters)			9/23/2009		3051A-ICPMS-PR					desicator sept 9 - met
				9/23/2009	 	6010C-S			V		desicator sept 9 - met
	SEL Analytes: PB		•							~	
0909160-004A	PS-Hand Truck (414 Liters)			9/23/2009		3051A-ICPMS-PR					desicator sept 9 - met
•				9/23/2009		6010C-S			V		desicator sept 9 -
· · · · · · · · · · · · · · · · · · ·	SEL Analytes: PB							• •		***.	

RMC

Laboratory Services Request Form

0909160

L'OUENT INFORMATION	General Salary		SEND REQUESTS TO:
Client Name: UNITED PARK CITY MIN	IES		American West
Client Address: PO BOX 1450 PARK CIT	Y, UT 84060		Analytical Laboratories
			463 W. 3600 South
Client Phone: 435-608-0954			Salt Lake City, UT
Client Fax: 435-615-1239	CHAPTER TO THE CONTRACT OF A SECURIT PRODUCT ASSOCIATION	CONTROL PERSONAL ENGINEER CONTROL CONTROL SERVICE SERVICE CONTROL CONTROL	84115
II ACCOUNT INFORMATION		er in the seculiar of the production	
Account Name:			Patrick Noteboom
Sample Questions Todd Leeds RMC- 801	-255-2626		Phone # (801) 750-2585
TAT: Standard	· · · · · · · · · · · · · · · · · ·	, 0	Fax (801)-263-8687
	P.O. No: 7-70	hardson Flat	
III REPORT INSTRUCTIONS			
Report Results To: KERRY GEE- UPCM AN			
Report Address: PO BOX 1450 PARK CITY UT 8			
	X) Fed Ex ()	Fax (X) Other	e Todd@rmc-ut.com
Services Requested below are required no later that	in		_ (date)
IV. TYPE OF SERVICE REQUESTED		erskinski (f. 1811)	
Please analyze the enclosed environmental samples		T	
Labuse	Sampling	No.	
Field Sample	Date & Time	of	Analysis
No./Description	1 0 4 2 200	Cont.	Requested
15-Up (510 1it	es) 9-9-2009	1 P3	
15-1800 (4/1 15- Hose (452 c			
00 11 15 1 11111	3	1111	
1)- Han 1 ruck (7/1)	()	,	
		-	
notes: Cd detection limits must be <0.0008 ppm		<u> </u>	
V CHAIN OF CUSTODY RECORD			
Dispatched by:	Date	Time	Courier Co. Name
			7
Relinquished by:	Date 9-9-2009	Time (5:14	Airbill #
Received by:	> Date 9/9/04	Time /574	Custody Seal Intact?
Received for lab by:	Date	Time	Yes No

Lab Set ID: 0909100

Samples Were:				COC Tap	e Was:				Container	Type:				· N	o. Rec.	· .
☐ Shipped By:				Preser	t on Or	iter Pacl	cage		□ AWAL S		Plastic					
2 Hand Delivered				□Ye	s en	O DN	/A		DAWALS			ass	· · · · · · · · · · · · · · · · · · ·		. :	
2 Ambient				Unbrok	en on C	uter pac	kage		D.AWAL S							
☐ Chilled				□Ye	s 🛛 🗅 N	io PN	/A	1	D AWAL S	upplied \	VOA/TO	C/TOX	Vials			
	16.1 °C					Sample			O Amber D					ace :		
Rec. Broken/Leak		□ N/A		□Ye		lo ON		1	□ Non AW						•	
Notes:						n Samp			Notes:				·			
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Properly Preserved	d DYes DNo	□ N/A	1	Notes:		:=						•		•		
Notes:					•	:		.			٠.				•	
													•			
Rec. Within Hold	Ø Yes □ No		•				:		Discrepanc	ies Betw	een Lat	els and	COC		Yes	Ø No
Notes:	·						•	Ī	Notes:							. 1
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	<u> </u>							1					· · · · · · · · · · · · · · · · · · ·		 	
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Bottle Type	Preservative	All pHs OK	<u> </u>					<u> </u>			<u> </u>				· .	<u> </u>
Ammonia	pH <2 H ₂ SO ₄		1			1	<u> </u>	$oldsymbol{ol}}}}}}}}}}}}}}}}}}$		<u> </u>				<u> </u>	<u> </u>	<u> </u>
COD	pH <2 H ₂ SO ₄		· \	<u> </u>		<u> </u>	<u> </u>	<u>l</u>		<u> </u>		1				
Cyanide	PH>12 NaOH		7		·	ļ		<u> </u>		<u> </u>		1			1	
Metals	pH <2 HNO₃			\ 				<u> </u>		<u> </u>						
NO ₂ & NO ₃	pH <2 H ₂ SO ₄	·		\				<u> </u>		<u> </u>	,			1	<u> </u>	<u> </u>
Nutrients	pH <2 H ₂ SO ₄		· · · · · · · · · · · · · · · · · · ·			ļ	ļ	ļ		ļ			<u>,</u>		4	1
0&0	pH <2 HCL		•		4 7.4	<u> </u>		 			<u> </u>	-	ļ.,			
Phenois	pH <2 H ₂ SO ₄			+-			ļ	<u> </u>		1		ļ			ļ.·.	ļ
Sulfide	pH > 9NaOH, ZnAC			+ -\	ļ	<u> </u>		<u> </u>			<u> </u>			-	 	<u> </u>
TKN	pH <2 H ₂ SO ₄					 	ļ:	ļ.	·			ļ				ļ
TOC	pH <2 H₃PO₄		· · · · ·	+			<u> </u>	1	•			ļ				ļ
TPO ₄	pH <2 H ₂ SO ₄		· · · ·	<u> </u>		 						 		ļ	ļ <u>.</u>	
TPH	pH <2 HCL			 	\	 	 	├		<u> </u>		1	 		 	
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Procedure: 1		n of sample in the .id gently over wide	sample e nance	ijū . nHipaper	•	ر در	<i>:</i> ·	•		•		•		•		•
3) Do Not dip the pH	paper in the sampl	e bottle	or lid						•		. : .	•			
4		served properly lis	t its exte	ension and	receiving	pH in the	appropria	te co	lumn above	,						
5 6		y clieπ for further- sation on COC	instructi	OUS	•				•		•				•	
7		djusted at client rec	quest									i				



Kerry Gee

AMERICAN WEST ANALYTICAL LABORATORIES

AMERICAN United Park City Mines Co.

WEST PO Box 1450

Park City, UT 84060-

TEL: (435) 608-0954 FAX (435) 615-1239

RE: Richardson Flat

463 West 3600 South Salt Lake City, Utah 84115

Dear Kerry Gee:

Lab Set ID: 0909160

American West Analytical Laboratories received 4 sample(s) on 9/9/2009 for the analyses presented in the following report.

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com All analyses were performed in accordance to The NELAC Institute protocols unless noted otherwise. American West Analytical Laboratories is certified by The NELAC Institute in the following states: Utah, Colorado, Idaho, and Texas. Certification document is available upon request. If you have any questions or concerns regarding this report please feel free to call.

Kyle F. Gross Laboratory Director

> Jose Rocha QA Officer

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitaion limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit.

This is a revised report for a report originally issued on 9/14/2009. By client request, samples were re-analyzed by method SW6020A.

Thank You,

Approved by

Laboratory Director or designee



Client:

United Park City Mines Co.

Units

mg/filter

Contact: Kerry Gee

Project:

Lead

Richardson Flat

AMERICAN

Lab Sample ID: 0909160-001

WEST

Client Sample ID: PS-Up (510 Liters)

ANALYTICAL LABORATORIES

Collection Date: 9/9/2009

Received Date:

9/9/2009

TOTAL METALS

Analytical Results

Method

Reporting Analytical

0.00033

Date Analyzed

10/1/2009 5:50:35 PM

Used

SW6020A

Limit Result

Result Qual

< 0.00033

463 West 3600 South Salt Lake City, Utah 84115

^- Reissue of a previously generated report. Information has been added, updated, or revised. Information herein supersedes that of the previously issued reports.

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 -mail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Jose Rocha QA Officer

> > > Report Date: 10/5/2009 Page 2 of 8

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

AMERICAN

0909160-002

WEST

ANALYTICAL LABORATORIES Client Sample ID: PS-Down (477 Liters) 9/9/2009

Collection Date: Received Date:

Lab Sample ID:

9/9/2009

TOTAL METALS

Method Used

Reporting

Limit

Analytical Result

Analytical Results

Lead

Units

mg/filter

10/1/2009 6:08:00 PM

Date Analyzed

SW6020A

0.00033 < 0.00033

Qual

463 West 3600 South Salt Lake City, Utah 84115

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(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awai@awal-labs.com

> Kyle F. Gross **Laboratory Director**

> > Jose Rocha **QA Officer**

> > > Report Date: 10/5/2009 Page 3 of 8



Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

AMERICAN Lab Sample ID:

0909160-003

Client Sample ID: PS-Hoe (452 Liters)

ANALYTICAL

Collection Date: LABORATORIES Received Date:

9/9/2009 9/9/2009

TOTAL METALS

previously issued reports.

Method Reporting

Analytical

Analytical Results

Units

Used **Date Analyzed**

Limit

Result Qual

Lead 463 West 3600 South

Salt Lake City, Utah 84115

mg/filter 10/1/2009 6:13:48 PM SW6020A 0.00033 0.0011^- Reissue of a previously generated report. Information has been added, updated, or revised. Information herein supersedes that of the

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> Kyle F. Gross **Laboratory Director**

> > Jose Rocha **QA** Officer

> > > Report Date: 10/5/2009 Page 4 of 8

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Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

AMERICAN

0909160-004 Lab Sample ID:

WEST

Client Sample ID: PS-Hand Truck (414 Liters)

ANALYTICAL

9/9/2009

LABORATORIES

Collection Date: 9/9/2009

TOTAL METALS

Method Reporting Analytical

Analytical Results

Received Date:

Date Analyzed

Used Limit Result Qual

Units mg/filter

10/1/2009 6:19:37 PM

SW6020A 0.00033 < 0.00033

463 West 3600 South Salt Lake City, Utah

84115

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(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross **Laboratory Director**

> > Jose Rocha **QA Officer**

> > > Report Date: 10/5/2009 Page 5 of 8



463 West 3600 South
Salt Lake City, Utah 84115
(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687
e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0909160

Project: Richardson Flat

Dept: ME

SampType: LCS

Sample ÎD	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
LCS-2963	Lead	mg/kg	SW6020A	20	20.00	0	100	85-115			10/1/2009

Report Date: 10/5/2009 Page 6 of 8



463 West 3600 South Sait Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0909160

Project: Richardson Flat

Dept: ME

SampType: LCSD

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
LCSD-2963	Lead	mg/kg	SW6020A	20	20.00	0	100	85-115	0.132	20	10/1/2009

Insufficient sample mass/volume was received to perform MS/MSD analysis. An LCSD was added to provide prescision data.

Report Date: 10/5/2009 Page 7 of 8



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0909160

Project: Richardson Flat

Dept: ME

SampType: MBLK

Sample ID	Analyte	Units	Method	Résult	Amount Spiked	Original Amount	% REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
MB-2963	Lead	mg/kg	SW6020A	< 0.65				•		-	10/1/2009

Report Date: 10/5/2009 Page 8 of 8

American West Analytical Laboratories

WORK ORDER Summary

Client ID:

UNI100

Contact:

Kerry Gee

Project:

Richardson Flat

QC Level: LEVEL II+

01-Oct-09

Work Order: 0909160 WO Type: Standard

Sample re-analyzed by metrod looz Reviewed by Samantha Broadhead on 9/9/2009

Comments: RMC client; QC2+; Email 2 People; Sample is a filter no pmoist. Metals by 6020 added 10/1/09-RW;

Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hld	MS	SEL	Sub	Storage
0909160-001A	PS-Up (510 Liters)	9/9/2009	9/9/2009 3:30:47 PM	9/23/2009	Filter	3051A-ICPMS-PR					desicator sept 9 - mei
				9/23/2009		6010C-S			Ø		desicator sept 9 - mei
	SEL Analytes: PB										
				9/23/2009		6020-S			V		desicator sept 9 - mei
	SEL Analytes: PB										
0909160-002A	PS-Down (477 Liters)			9/23/2009		3051A-ICPMS-PR					desicator sept 9 - mei
				9/23/2009		6010C-S			\mathbf{V}		desicator sept 9 - mei
	SEL Analytes: PB	·						_		_	
	•			9/23/2009		6020-S			\mathbf{V}		desicator sept 9 - mei
	SEL Analytes: PB					4					
0909160-003A	PS-Hoe (452 Liters)			9/23/2009		3051A-ICPMS-PR	. 🗆				desicator sept 9 - mei
				9/23/2009		6010C-S			V		desicator sept 9 - mei
	SEL Analytes: PB						_			_	
,				9/23/2009		6020-S	П	$\overline{\Box}$	\square		desicator sept 9 - mei
	SEL Analytes: PB							_	_	_	•
0909160-004A	PS-Hand Truck (414 Liters)			9/23/2009		3051A-ICPMS-PR					desicator sept 9 - mei
				9/23/2009	·	6010C-S			V	$\overline{\Box}$	desicator sept 9 - mei
	SEL Analytes: PB						ш.	_			
				9/23/2009		6020-S			\mathbf{Z}		desicator sept 9 - met
	SEL Analytes: PB										_

American West Analytical Laboratories WORK ORDER Summary 09-Sep-09 Work Order: 0909160 UNI100 Client ID: WO Type: Standard Contact: Kerry Gee Project: Richardson Flat QC Level: LEVEL II+ Reviewed by on RMC client; QC2+; Email 2 People; Sample is a filter no pmoist; Comments: Sp Client Sample ID Sample ID **Date Collected Date Received** Date Due Test Code Hld MS SEL Sub Storage Matrix 0909160-001A 9/9/2009 PS-Up (510 Liters) 9/9/2009 3:30:47 PM 9/23/2009 Filter 3051A-ICPMS-PR desicator sept 9 desicator sept 9 -9/23/2009 6010C-S SEL Analytes: PB 0909160-002A PS-Down (477 Liters) desicator sept 9 -9/23/2009 3051A-ICPMS-PR 9/23/2009 6010C-S desicator sept 9 -SEL Analytes: PB 0909160-003A 3051A-ICPMS-PR PS-Hoe (452 Liters) 9/23/2009 desicator sept 9 -9/23/2009 desicator sept 9 -6010C-S SEL Analytes: PB PS-Hand Truck (414 Liters) 0909160-004A 9/23/2009 desicator sept 9 -3051A-ICPMS-PR

9/23/2009

SEL Analytes: PB

6010C-8

desicator sept 9 -

RMC

Laboratory Services Request Form

0909160

CLIENT INCORMATION OF STATE OF			SEND REQUESTS TO:
Client Name: UNITED PARK CITY MINES			American West
Client Address: PO BOX 1450 PARK CITY, UT	T 84060		Analytical Laboratories
			463 W. 3600 South
Client Phone: 435-608-0954			Salt Lake City, UT
Client Fax: 435-615-1239			84115
II ACOOUNT INFORMATION LIPE UN A COUNT DE SELOCI			
Account Name:		1000	Patrick Noteboom
Sample Questions Todd Leeds RMC-801-255	-2626		Phone # (801) 750-2585
EL I I		4	Fax (801)-263-8687
		hardson Flat	
III REPORTUNISTRUCTIONS		4.1	the hours of the second
Report Results To: KERRY GEE- UPCM AND TO	DDD LEEDS - RMC	C FAX-255-3266	
Report Address: PO BOX 1460 PARK CITY UT 84060	AND TODD LEEDS, RI	MC, 8138 S. STATE ST., ST	E 2A, MIDVALE UT 84047
Please Forward Results By: US Mail (X)	Fed Ex ()		e Todd@rmc-ut.com
Services Requested below are required no later than			(date)
IV. TYPEOP SERMICE REQUESTED (1997)			
Please analyze the enclosed environmental samples for:	γ	-	
Lab Use.	Sampling	No.	
Field Sample	Date & Time	of	Analysis
No./Description		Cont.	Requested
P5-Up (510 17tes)	9-9-2009	1 PI	
15-Doven (477 11)	1		
15- true (452 ")			
PS-Hand Truck (414 ")	4	2	
		·	
·	1		:
	<u> </u>		
notes: Cd detection limits must be <0.0008 ppm			
Dispatched by:	Date	Time	
			Courier Co. Name
Relinquished by:	Date 9-9-2009	Time (5:14	Alrbill #
Received by:	Date 9/9/09	Time /574	Custody Seal Intact?
Received for lab by:	Date	Time	Yes No

Samples Were:			COC Tar			Container			No. Rec.
☐ Shipped By:			Prese	nt on Outer Packa	ge	DAWALS	upplied Plastic		
2 Hand Delivered			O Ye	es a No DN/A	<u>.</u>	DAWAL S	upplied Clear Gl	ass	
2 Ambient		•	Unbrol	ken on Outer pack	age	□ AWAL S	upplied Amber (lass	
☐ Chilled			T DY6	s DNo BANA	·	DAWALS	upplied VOA/TO	C/TOX Vials	
Temperature	16.1 °C		Pr	esent on Sample		☐ Amber □	Clear D Headsp	ace □ No Headspac	e .
Rec. Broken/Leak		O N/A	ΠYe	s ZNo DN/A	į.	□ Non AW	AL Supplied Con	tainer	
Notes:				broken on Sample		Notes:	SP		
				s dno dava			136	•	
Properly Preserved	d GYes DNo	U N/A	Notes:	•		7			
Notes:			1	. •	٠	· ·	٠.	•	
			1	*				·	<u> </u>
Rec, Within Hold.	í Yes □ No			•	•		ies Between Lai	els and COC	☐ Yes ØNo
Notes:			} .	•	•	Notes:	•		
, ,		•					· .		
	• • •	•	'			(•	•		
L			l	. •.		ــــــــــــــــــــــــــــــــــــــ		·	
Datela Tirra	Preservative	All pHs OK		 			 	 	
Bottle Type Ammonia	pH <2 H ₂ SO ₄	All pris Ok.		 -				 	
COD	pH <2 H ₂ SO ₄	 	 	}	7- ;		 	1 1	
Cyanide	PH>12 NaOH	—	·	 				 	
Metals	pH <2 HNO ₃		\				1	1: 7	
NO ₂ & NO ₃	pH <2 H ₂ SO ₄		\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			· · · · · · · · · · · · · · · · · · ·		 	- - - - - - - - - -
Nutrients .	pH <2 H₂SO₄		1					 	
0&0	pH <2 HCL		1	.44.					
Phenols	pH <2 H₂SO ₄					•			
Sulfide	pH > 9NaOH, ZnAC								
TKN	pH<2H ₂ SO ₄				· ·				
TOC	pH <2 H₃PO₄								
T.PO ₄	pH <2 H ₂ SO ₄								
TPH	pH <2 HCL								· :
					<u> </u>				
				7					
		· · · · · · · · · · · · · · · · · · ·							
				\dm \					1
Procedure: 1)	Pour a small amour	it of sample in the same	ole ild .						

Pour a small amount of sample in the sample lid

Pour sample from Lid gently over wide range pH paper

Do Not dip the pH paper in the sample bottle or lid

If sample is not preserved properly list its extension and receiving pH in the appropriate column above.

Flag COC and notify client for further instructions

Place client conversation on COC

Samples may be adjusted at client request



Kerry Gee

AMERICAN United Park City Mines Co.

WEST PO Box 1450

ANALYTICAL LABORATORIES

Park City, UT 84060-

TEL: (435) 608-0954 FAX (435) 615-1239

RE: Richardson Flat

463 West 3600 South

Dear Kerry Gee:

Lab Set ID: 0910411

Salt Lake City, Utah 841.15

> American West Analytical Laboratories received 4 sample(s) on 10/22/2009 for the analyses presented in the following report.

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

All analyses were performed in accordance to The NELAC Institute protocols unless noted otherwise. American West Analytical Laboratories is certified by The NELAC Institute in the following states: Utah, Colorado, Idaho, and Texas. Certification document is available upon request. If you have any questions or concerns regarding this report please feel free to call.

Kyle F. Gross **Laboratory Director**

> Jose Rocha **OA Officer**

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitaion limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit.

Thank You,

coratory Director or designee

Report Date: 10/29/2009 Page 1 of 8



Date Analyzed

10/26/2009 10:49:02 PM

Client:

United Park City Mines Co.

Units

mg/filter

SW6020A

Contact: Kerry Gee

Project:

Lead

Richardson Flat

AMERICAN Lab Sample ID:

0910411-001

WEST Client Sample ID: PS-Up (903 Liters)

ANALYTICAL Collection Date:

10/22/2009

LABORATORIES

10/22/2009

TOTAL METALS	TOT	AT.	MET	AT	2
--------------	-----	-----	-----	----	---

Analytical Results

Received Date:

Method Reporting Analytical Limit Used Result Qual

< 0.00033

0.00033

463 West 3600 South Salt Lake City, Utah

84115

(801) 263-8686 Toll Free (888) 263-8686

Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross **Laboratory Director**

> > Jose Rocha **QA** Officer

> > > Report Date: 10/29/2009 Page 2 of 8

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. This report is provided for the exclusive use of the addresses. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addresses will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



Client:

Lead

United Park City Mines Co.

Contact: Kerry Gee

Project:

Lab Sample ID:

Received Date:

Richardson Flat

AMERICAN

0910411-002

WEST

Client Sample ID: PS-Down (933 Liters)

ANALYTICAL Collection Date:

10/22/2009

LABORATORIES

10/22/2009

TOTAL METALS

Method Reporting

0.00033

Analytical Results

Units mg/filter Date Analyzed

10/26/2009 11:06:30 PM

Used Limit

SW6020A

Analytical

< 0.00033

Result Qual

463 West 3600 South Salt Lake City, Utah

84115

(801) 263-8686 Toll Free (888) 263-8686

Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross **Laboratory Director**

> > Jose Rocha **QA** Officer

> > > Report Date: 10/29/2009 Page 3 of 8



Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

Lab Sample ID: **AMERICAN**

0910411-003

WEST

ANALYTICAL Collection Date:

Client Sample ID: PS-Hoe (846 Liters)

10/22/2009

LABORATORIES

10/22/2009

TO	A TP	т :		ATC
IU	-1.6	L	MET	ALO

Method Reporting Analytical

Analytical Results

Lead

Received Date:

Units mg/filter Date Analyzed

10/26/2009 11:12:19 PM

Used

SW6020A

Limit

0.00033

Result Qual

< 0.00033

463 West 3600 South Salt Lake City, Utah

84115

(801) 263-8686 Toli Free (888) 263-8686

Fax (801) 263-8687

e-mail: awal@awal-labs.com

Kyle F. Gross **Laboratory Director**

> Jose Rocha **QA Officer**

> > Report Date: 10/29/2009 Page 4 of 8

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

AMERICAN Lab Sample ID:

0910411-004

WEST Client Sample ID: PS-Haul Truck (852 Liters)

ANALYTICAL

10/22/2009

LABORATORIES Received Date:

10/22/2009

TOTAL METALS

Collection Date:

Method Reporting

Analytical

Analytical Results

Units

Date Analyzed 10/26/2009 11:18:08 PM Used

Limit

Result Qual

Lead

mg/filter

SW6020A

0.00033

0.00042

463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross **Laboratory Director**

> > Jose Rocha QA Officer

> > > Report Date: 10/29/2009 Page 5 of 8



463 West 3600 South
Salt Lake City, Utah 84115
(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687
e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0910411

Project: Richardson Flat

Dept: ME

SampType: LCS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	Analysis %RPD RPD Limit Qualifiers Date
LCS-3609	Lead	mg/kg	SW6020A	20	20.00	0	100	85-115	10/26/2009

Report Date: 10/29/2009 Page 6 of 8



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0910411

Project: Richardson Flat

Dept: ME

SampType: LCSD

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	% REC	Limits	%RPD	RPD Limit Qualif	Analysis iers Date
LCSD-3609	Lead	mg/kg	SW6020A	20	20.00	0	98.8	85-115	1.45	20	10/26/2009

Insufficient sample mass/volume was received to perform MS/MSD analysis. An LCSD was added to provide prescision data.

Report Date: 10/29/2009 Page 7 of 8



463 West 3600 South
Salt Lake City, Utah 84115
(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687
e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0910411

Project: Richardson Flat

Dept: ME

SampType: MBLK

Sample ID	Analyte	Vnits	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
MB-3609	Lead	mg/kg	SW6020A	< 0.65		·		•			10/26/2009

Report Date: 10/29/2009 Page 8 of 8



American West Analytical Laboratories

WORK ORDER Summary

28-Oct-09

Work Order: 0910411

WO Type: Standard

Client ID:

UNI100

Contact:

Kerry Gee

Project:

Richardson Flat

QC Level: LEVEL II+

Reviewed by Samantha Broadhead on 10/22/2009

Comments: 2 day RUSH added 10/28/09 per Todd Leeds. RMC client: Email copy of report to Todd Leeds; QC2+; Sample is a filter no pmoist.;

Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hld	MS	SEL	Sub	Storage
0910411-001A	PS-Up (903 Liters)	10/22/2009	10/22/2009 5:46:01 PM	10/30/2009	Filter	3051A-ICPMS-PR					desicator
				10/30/2009		6020-S			Ø		desicator
	SEL Analytes: PB			<u> </u>	· · · · · · · · · · · · · · · · · · ·	<u> </u>					<u> </u>
0910411-002A	PS-Down (933 Liters)			10/30/2009		3051A-ICPMS-PR					desicator
				10/30/2009		6020-S			V		desicator
	SEL Analytes: PB		•								
910411-003A	PS-Hoe (846 Liters)			10/30/2009		3051A-ICPMS-PR					desicator
				10/30/2009		6020-S		П	\square	П	desicator
	SEL Analytes: PB										
0910411-004A	PS-Haul Truck (852 Liters)			10/30/2009		3051A-ICPMS-PR				. 🗆	desicator
	•	•		10/30/2009		6020-S	П	П	Ø		desicator
	SEL Analytes: PB						_				

American West Analytical Laboratories

WORK ORDER Summary

22-Oct-09

Work Order: 0910411

WO Type: Standard

Client ID: UNI100

Kerry Gee

Contact: Project:

Richardson Flat

QC Level: LEVEL II+

Reviewed by on

RMC client: Email copy of report to Todd Leeds; QC2+; Sample is a filter no pmoist; Comments:

• •	HCX-DB?												
Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hld	MS	SEL	Sub	Storage		
0910411-001A	PS-Up (903 Liters)	10/22/2009	10/22/2009 5:46:01 PM	11/5/2009	Filter	3051A-ICPMS-PR					desicoator		
	SEL Analytes: PB			11/5/2009		6020-S			Ø		desiccator	······································	
0910411-002A	PS-Down (933 Liters)		·	11/5/2009		3051A-ICPMS-PR					desiceator		
	SEL Analytes: PB			11/5/2009		6020-S		Ō	V		desiccator		
0910411-003A	PS-Hoe (846 Liters)			11/5/2009		3051A-ICPMS-PR					desiccator		
	SEL Analytes: PB			11/5/2009		6020-S			\square		desiccator		
0910411-004A	PS-Haul Truck (852 Liters)			11/5/2009		3051A-ICPMS-PR					desiccator		
	SEL Analytes: PB		· · · · · · · · · · · · · · · · · · ·	11/5/2009		6020-S			☑		desiccator		

Laboratory Services Request Form

I CLIENT IN	FORMATION		a de la companya de	(0,0)	Territoria	SEND REQUESTS TO:
Client Nam	ne:	UNITED PARK CITY MINES				American West
Client Add	ress:	PO BOX 1450 PARK CITY, U	T 84060			Analytical Laboratories
						463 W. 3600 South
Client Pho	ne:	435-608-0954	_			Salt Lake City, UT
Client Fax:		435-615-1239				84115
		ONE ASSESSMENT OF THE SECOND				
Account N						Patrick Noteboom
Sample Q	uestions <u>-</u>	Todd Leeds RMC- 801-255	5-2626			Phone # (801) 750-2585
	Standard		P.O. No: Rich	iardson	Plat	Fax (801)-263-8687
III. REPORT	TINSTRUCTIC	DNS - PARTIE				
Report Re	sults To:	KERRY GEE- UPCM AND T	ODD LEEDS - RMC	C FAX-255	5-3266	
Report Ad	dress:	PO BOX 1450 PARK CITY UT 84060	AND TODD LEEDS, R	MC, 8138 S.	STATE ST., STE	2A, MIDVALE UT 84047
	rward Results I		Fed Ex ()	Fax ()	() Othe	Todd@rmc-ut.com
Services F	Requested belo	w are required no later than _	Dvetenovenske site og sk	eemawaa ka	787-5.14 September 2383.	(date)
		equested			hilde weeks didn't	
THE PROPERTY OF THE PARTY	yze the enclos	ed environmental samples for:				
LabUse			Sampling	No.		
Only		Field Sample	Date & Time	of	,	Analysis
Lab No.	P5-Up	No./Description (903 Liters	10/22/2009	Cont.	Pb	Requested
	PS-Down	(933 Ltcs	101400-1	1	ط ا	
	PS- Hoe	(846 11				
	PS- Haul T	V 1		1	1	
	13 11000	The land of		-		

notes:	Gd detection li	imits must be <0.0008 ppm	Louist Ava	ilable	Detection	Limit
V. OHAIN O	OF CUSTODY I	RECORD				
Dispatched to	ру:		Date	Time		Courier Co. Name
Relinquished	by:		_Date 10/22/09	Time \	7:17	Airbill #
Received by	1.		Date 10/22/09	Time /	117	Custody Seal Intact?
1		*		-		

Samples Were:				OC Tap					tainer I					· N	o. Rec.	
☐ Shipped By:				Preser		ter Pack		ПΑ	WAL St	ipplied F	lastic					
Hand Delivere	ed			□ Ye		lo DN/.			WAL S	ipplied C	lear Gla	SS				
Ambient				Unbrok		uter pac			WAL S							
☐ Chilled						0 0 N/						C/TOX	Vials			
	74.4 °C	· · · · · · · · · · · · · · · · · · ·				Sample						ace 🗆 No		ace		*
Rec. Broken/Lea	<u> </u>	□ N/A		□Ye	s ZN	lo 🗆 N/.	Α		on AWA							
Notes:	=== <u>S</u> = = = = = = = = = = = = = = = = = = =					n Sample		Not		***	100			 		•
				□ Ye		o ZN/				• •	1/		•			
Properly Preserv	ed ⊉Yes □No	D N/A	N	otes:				_			,					
Notes:	<u> </u>	<u> </u>				:			•		• •		.'	• ' '		
	. /							1.					•			_
Rec. Within Hol	d 41 Yes 🗆 No							Dis	сгерадс	es Betw	een Lab	els and (COC		Yes	Ø No
Notes:	· · · · · · · · · · · · · · · · · · ·							Not			•		•			
		•	.			•			•	٠, ٠					: · · ·	•
					•			-			•		•	*		
					<u>: </u>											
		1	<u> </u>							<u> </u>		<u> </u>	• • •	··		
Bottle Type	Preservative	All pHs OK	1		 					ļ		ļ	1	ļ		
Ammonia	pH <2 H ₂ SO ₄		1		ļ	1								 	 	
COD	pH <2 H ₂ SO ₄		\bot		ļ	<u> </u>			:		٠				<u> </u>	·
Cyanide	PH >12 NaOH		-+		<u> </u>				<u> </u>							-
Metals	pH <2 HNO₃		 1	1	ļ	 			ļ		<u> </u>	ļ	ļ	-	 	
	pH <2 H₂SO₄	1 1	1			1			<u> </u>						 	
NO ₂ & NO ₃		 	1	 		· · · · · · · · · · · · · · · · · · ·										
Nutrients	pH <2 H ₂ SO ₄		/	V					•		· · · · · ·				+	
Nutrients O & G	pH <2 H ₂ SO ₄ pH <2 HCL			\ <u>-</u>	3.7.											
Nutrients O & G Phenols	pH <2 H ₂ SO ₄ pH <2 HCL pH <2 H ₂ SO ₄				4.74											
Nutrients O & G Phenols Sulfide	pH <2 H ₂ SO ₄ pH <2 HCL pH <2 H ₂ SO ₄ pH >9 NaOH, ZnAC									:						
Nutrients O & G Phenols Sulfide TKN	pH <≥ H ₂ SO ₄ pH <≥ HCL pH <≥ H ₂ SO ₄ pH > 9NaOH, ZnAC pH <≥ H ₂ SO ₄															
Nutrients O & G Phenols Sulfide TKN TOC	pH <≥ H ₂ SO ₄ pH <≥ HCL pH <≥ H ₂ SO ₄ pH > 9NaOH, ZnAC pH <≥ H ₂ SO ₄ pH <≥ H ₂ SO ₄ pH <≥ H ₃ PO ₄															
Nutrients O & G Phenols Sulfide TKN TOC T PO ₄	pH <≥ H ₂ SO ₄ pH <≥ HCL pH <≥ H ₂ SO ₄ pH > 9NaOH, ZnAC pH <≥ H ₂ SO ₄ pH <≥ H ₂ SO ₄ pH <≥ H ₃ PO ₄ pH <≥ H ₂ SO ₄															
Nutrients O & G Phenols Sulfide TKN TOC	pH <≥ H ₂ SO ₄ pH <≥ HCL pH <≥ H ₂ SO ₄ pH > 9NaOH, ZnAC pH <≥ H ₂ SO ₄ pH <≥ H ₂ SO ₄ pH <≥ H ₃ PO ₄															
Nutrients O & G Phenols Sulfide TKN TOC T PO ₄	pH <≥ H ₂ SO ₄ pH <≥ HCL pH <≥ H ₂ SO ₄ pH > 9NaOH, ZnAC pH <≥ H ₂ SO ₄ pH <≥ H ₂ SO ₄ pH <≥ H ₃ PO ₄ pH <≥ H ₂ SO ₄															
Nutrients O & G Phenols Sulfide TKN TOC T PO ₄	pH <≥ H ₂ SO ₄ pH <≥ HCL pH <≥ H ₂ SO ₄ pH > 9NaOH, ZnAC pH <≥ H ₂ SO ₄ pH <≥ H ₂ SO ₄ pH <≥ H ₃ PO ₄ pH <≥ H ₂ SO ₄								20							
Nutrients O & G Phenols Sulfide TKN TOC T PO ₄	pH <≥ H ₂ SO ₄ pH <≥ HCL pH <≥ H ₂ SO ₄ pH > 9NaOH, ZnAC pH <≥ H ₂ SO ₄ pH <≥ H ₂ SO ₄ pH <≥ H ₃ PO ₄ pH <≥ H ₂ SO ₄															
Nutrients O & G Phenols Sulfide TKN TOC T PO ₄ TPH	pH <≥ H ₂ SO ₄ pH <2 HCL pH <2 H ₂ SO ₄ pH > 9NaOH, ZnAC pH <2 H ₂ SO ₄	nt of sample in the		lid												
Nutrients O & G Phenols Sulfide TKN TOC T PO ₄	pH <≥ H ₂ SO ₄ pH <2 HCL pH <2 H ₂ SO ₄ pH > 9NaOH, ZnAC pH <2 H ₂ SO ₄	nt of sample in the	sample	pH paper		7										



Kerry Gee

AMERICAN WEST ANALYTICAL United Park City Mines Co.

PO Box 1450

ANALYTICAL Park City, UT 84060-LABORATORIES

> TEL: (435) 608-0954 FAX (435) 615-1239

RE: Richardson Flat

463 West 3600 South Salt Lake City, Utah 84115

Dear Kerry Gee:

Lab Set ID: 0909159

American West Analytical Laboratories received 1 sample(s) on 9/9/2009 for the analyses presented in the following report.

(801) 263-8686 Toli Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com All analyses were performed in accordance to The NELAC Institute protocols unless noted otherwise. American West Analytical Laboratories is certified by The NELAC Institute in the following states: Utah, Colorado, Idaho, and Texas. Certification document is available upon request. If you have any questions or concerns regarding this report please feel free to call.

Kyle F. Gross Laboratory Director The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitation limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit.

Jose Rocha QA Officer

Thank You,

Approved by:

Laboratory Director or designee

Report Date: 9/14/2009 Page 1 of 6



INORGANIC ANALYTICAL REPORT

Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

AMERICAN

WEST

0909159-001

ANALYTICAL

Client Sample ID: CV-TS81409 Collection Date:

LABORATORIES

463 West 3600 South Salt Lake City, Utah

84115

8/14/2009 9/9/2009

LS	MET	AL	TOT
LS	MET	AL	TOT

Lab Sample ID:

Received Date:

TOTAL METALS	•		Method	Reporting	Analytical	
Analytical Results	Units	Date Analyzed	Used	Limit	Result	Qual
Arsenic	mg/kg-dry	9/10/2009 4:00:00 PM	SW6010C	5.2	9.0	
Lead	mg/kg-dry	9/10/2009 4:00:00 PM	SW6010C	5.2	21	,

* - Matrix spike recoveries and/or high RPDs indicate suspected sample non-homogeneity. The method is in control as indicated by the LCS.

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 mail: awal@awal-labs.com

> Kyle F. Gross **Laboratory Director**

> > Jose Rocha **QA** Officer

> > > Report Date: 9/14/2009 Page 2 of 6

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. This report is provided for the exclusive use of the addresses. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addresses will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha OA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0909159

Project: Richardson Flat

Dept: ME

SampType: LCS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
LCS-2962	Arsenic	mg/kg	SW6010C	20	20.00	0	98.8	75-125			9/10/2009
LCS-2962	Lead	mg/kg	SW6010C	20	20.00	0	99.3	75-125			9/10/2009

Report Date: 9/14/2009 Page 3 of 6



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0909159

Project: Richardson Flat

Dept: ME

SampType: MBLK

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
MB-2962	Arsenic	mg/kg	SW6010C	< 5.0		•		-			9/10/2009 .
MB-2962	Lead	mg/kg	SW6010C	< 5,0				•			9/10/2009

Report Date: 9/14/2009 Page 4 of 6



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0909159

Project: Richardson Flat

Dept: ME

SampType: MS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	Anal %RPD RPD Limit Qualifiers Da	lysis ate
0909159-001AMS	Arsenic	mg/kg-dry	SW6010C	36	21.44	8.959	125	75-125	9/10/	/2009
0909159-001AMS	Lead	mg/kg-dry	SW6010C	73	21.44	20.83	243	75-125	3 9/10/	

¹ - Matrix spike recoveries and/or high RPDs indicate suspected sample non-homogenetly. The method is in control as indicated by the LCS.

Report Date: 9/14/2009 Page 5 of 6



463 West 3600 South

Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0909159

Project: Richardson Flat

Dept: ME

SampType: MSD

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qualifiers	Analysis Date
0909159-001AMSD	Arsenic	mg/kg-dry	SW6010C	32	22.10	8.959	106	75-125	10.1	20		9/10/2009
0909159-001AMSD	Lead	mg/kg-dry	SW6010C	45	22.10	20.83	111	75-125	46.7	20	3	9/10/2009

[.] Matrix spike recoveries and/or high RPDs indicate suspected sample non-homogeneity. The method is in control as indicated by the LCS.

Report Date: 9/14/2009 Page 6 of 6

American West Analytical Laboratories

WORK ORDER Summary

09-Sep-09

Client ID:

UNI100

Contact:

Kerry Gee

Project:

Richardson Flat

QC Level: LEVEL ||+

WO Type: Standard

Work Order: 0909159

Comments:

RMC client; QC2+; Email 2 People;

HALLY DR

Reviewed by on

COS

			TUK-ZUD								
Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hld	MS	SEL	Sub	Storage	
CV-TS81409	8/14/2009	9/9/2009 3:30:39 PM	9/23/2009	Soil	3051A-ICPMS-PR						
			9/23/2009		6010C-S			V			
SEL Analytes: AS PB											
			9/23/2009	, , , , , , , , , , , , , , , , , , , ,	PMOIST						
	Client Sample ID CV-TS81409	Client Sample ID Date Collected CV-TS81409 8/14/2009	Client Sample ID Date Collected Date Received CV-TS81409 8/14/2009 9/9/2009 3:30:39 PM	Client Sample ID Date Collected Date Received Date Due CV-TS81409 8/14/2009 9/9/2009 3:30:39 PM 9/23/2009 9/23/2009 SEL Analytes: AS PB	Client Sample ID Date Collected Date Received Date Due Matrix CV-TS81409 8/14/2009 9/9/2009 3:30:39 PM 9/23/2009 Soil 9/23/2009 SEL Analytes: AS PB	Client Sample ID Date Collected Date Received Date Due Matrix Test Code CV-TS81409 8/14/2009 9/9/2009 3:30:39 PM 9/23/2009 Soil 3051A-ICPMS-PR 9/23/2009 6010C-S SEL Analytes: AS PB	Client Sample ID Date Collected Date Received Date Due Matrix Test Code HId CV-TS81409 8/14/2009 9/9/2009 3:30:39 PM 9/23/2009 Soil 3051A-ICPMS-PR □ SEL Analytes: AS PB	Client Sample ID Date Collected Date Received Date Due Matrix Test Code HId MS CV-TS81409 8/14/2009 9/9/2009 3:30:39 PM 9/23/2009 Soil 3051A-ICPMS-PR	Client Sample ID Date Collected Date Received Date Due Matrix Test Code HId MS SEL CV-TS81409 8/14/2009 9/9/2009 3:30:39 PM 9/23/2009 Soil 3051A-ICPMS-PR □ □ □ □ SEL Analytes: AS PB SOII SOII SOII SOII SOII SOII <t< td=""><td>Client Sample ID Date Collected Date Received Date Due Matrix Test Code HId MS SEL Sub CV-TS81409 8/14/2009 9/9/2009 3:30:39 PM 9/23/2009 Soil 3051A-ICPMS-PR □</td><td>Client Sample ID Date Collected Date Received Date Due Matrix Test Code HId MS SEL Sub Storage CV-TS81409 8/14/2009 9/9/2009 3:30:39 PM 9/23/2009 Soil 3051A-ICPMS-PR □</td></t<>	Client Sample ID Date Collected Date Received Date Due Matrix Test Code HId MS SEL Sub CV-TS81409 8/14/2009 9/9/2009 3:30:39 PM 9/23/2009 Soil 3051A-ICPMS-PR □	Client Sample ID Date Collected Date Received Date Due Matrix Test Code HId MS SEL Sub Storage CV-TS81409 8/14/2009 9/9/2009 3:30:39 PM 9/23/2009 Soil 3051A-ICPMS-PR □

RMC

Laboratory Services Request Form

0909159

DOMESTIC TO THE PARTY OF THE PA	* POPULATION OF PARAMETERS FROM BOTH	http://www.minimage.com/death.com/de					
I. CEIENT I	NFORMATION		() 11.10			SEND REQUESTS	TO:
Client Nar	me:	UNITED PARK CITY MINES				American West	
Client Add	dress:	PO BOX 1450 PARK CITY, UT	Γ 84060			Analytical Laborat	ories
						463 W. 3600 South	
Client Pho	one:	435-608-0954				Salt Lake City, U	Т
Client Fax	::	435-615-1239	-			84115	
IL ACCOUN	NT INFORMATI	ON I	4.00	· 本 ※	en en en Por		
Account N	lame:					Patrick Noteboom	
Sample C	luestions-	Todd Leeds RMC- 801-255	-2626			Phone # (801) 750-	2585
	-1 0	0				Fax (801)-263-8687	7
TAT:	Standar	٦.	P.O. No: 120	chardson	Flat		
III. REPOR	TINSTRUCTIO	ons :					SH H
Report Re	sults To:	KERRY GEE- UPCM AND TO	DDD LEEDS - RM	C FAX-25	5-3266	100000000000000000000000000000000000000	38.00
		PO BOX 1450 PARK CITY UT 84060				2A, MIDVALE UT 84047	
	rward Results B					Todd@rmc-ut.com	
		w are required no later than				(date)	
IVATYPE O	F SERVICE RE	EQUESTED				La presenta	ark.
		ed environmental samples for:					
Lab Use			Sampling	No.			
Only 7		Field Sample	Date & Time	of		Analysis	
Lab No		No./Description		Cont.		Requested	
	CV-TS	5 81409	8-14-2009	1	96+	As	
-							
notes:	Cd detection li	mits must be <0.0008 ppm					
V CHAIN C	F CUSTODY F	EGORD				$I_{i} = I_{i}$	
Dispatched t	oy:		Date	Time		Courier Co. Name	
Relinquished	by:		Date 9-9-2009		:14	Airbill #	
Received by	1		Date 9/9/09	16	-14		
Received for	1		Date // 1/09	Time /5	77	Custody Seal Intact?	Na
			Date	Time		Yes	No

Lab Set ID:	0909159	

Samples Were:	·		COC Tap					Container '					· No	o. Rec.	
☐ Shipped By:			Preser		ter Pack	cage		□ AWAL Supplied Plastic							
Hand Delivered	l		□ Yes INo □ N/A					AWAL S	upplied (Clear Gla	ISS ·	•		•	
2 Ambient	•		Unbroken on Outer package					☐ AWAL Supplied Amber Glass							
☐ Chilled			□Ye	s 🗆 N	0 0 N	/A		AWAL S	ipplieh V	/OA/TO	C/TOX	Vials			
Temperature	15/1°C		Pr	esent on	Sample			Amber D	Clear \	Headspa	ace 🗆 No	Headsp	ace		ļ
Rec. Broken/Leak	ing Yes INo	D N/A	□Ye	s ØN	o □N/	/A		Non AWA	L Suppl	ied Cont	ainer				, .
Notes:			Unb	roken o	n Sampl	e		otes:		Sh					
1			□Ye	s 🗆 N	o ZN	/A	- 1			<i>.</i>					1
Properly Preserve	d ZYes □No	U N/A	Notes:		•		-	•							
Notes:				٠.	:		j						•	·	
	/														
Rec. Within Hold	Z Yes □ No				•	,	D	iscrepanci	ies Betw	een Lab	els and	COC		Yes	Ø No
Notes:	, , , , , , , , , , , , , , , , , , , ,]				N	otes:							
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<u>L</u>	 			-			1,			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		·		
	T-s :-	1 11 22 Azz 1			 		· .		,		` ` ` 	· ·			1
Bottle Type	Preservative	All pHs QK				 					ļ , —	-			
Ammonia COD	pH <2 H ₂ SO ₄	 		 	 								<u> </u>		
Cyanide	pH <2 H ₂ SO ₄ PH >12 NaOH	 \	. 		 	 		• • • •					 	 	
Metals	pH <2 HNO ₃	\\				 				<u> </u>	-		 		\vdash
NO ₂ & NO ₃	pH <2 H ₂ SO ₄	 				 		- 			 				
Nutrients	pH <2 H ₂ SO ₄	 			 			<u>.</u>	<u> </u>		<u> </u>	 			
0 & G	pH <2 HCL	 		4									-		1
Phenois	pH <2 H ₂ SO ₄		\					.							
Sulfide	pH > 9NaOH, ZnAC					1		.		1.	 				
TKN	pH <2 H ₂ SO ₄		<u> </u>					1	·						-
TOC	pH <2 H₃PO₄		1				•						. :		1
T PO ₄	pH <2 H ₂ SO ₄	•	- \											•	
TPH	pH <2 HCL														:
			1. 1.										• • •		
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			\												
			`	\ <u></u>			,								
Procedure: 1) Pour a small amou	nt of sample in the sam	ple lid	TSY	7								• .		

Pour a small amount or sample in the sample lid

Pour sample from Lid gently over wide range pH paper

Do Not dip the pH paper in the sample bottle or lid

If sample is not preserved properly list its extension and receiving pH in the appropriate column above

Flag COC and notify client for further instructions

Place client conversation on COC

Samples may be adjusted at client request



Kerry Gee

AMERICAN United Park City Mines Co.

WEST PO Box 1450

Park City, UT 84060-

TEL: (435) 608-0954 FAX (435) 615-1239

RE: Richardson Flat

463 West 3600 South Salt Lake City, Utah 84115

LABORATORIES

Dear Kerry Gee:

Lab Set ID: 0910412

American West Analytical Laboratories received 2 sample(s) on 10/22/2009 for the analyses presented in the following report.

All analyses were performed in accordance to The NELAC Institute protocols unless noted otherwise. American West Analytical Laboratories is certified by The NELAC Institute in the following states: Utah, Colorado, Idaho, and Texas. Certification document is available upon request. If you have any questions or concerns regarding this report please feel free to call.

Kyle F. Gross Laboratory Director

> Jose Rocha QA Officer

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitaion limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit.

Thank You,

Approved by

aboratory Director or designee

Report Date: 10/29/2009 Page 1 of 7



INORGANIC ANALYTICAL REPORT

Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

AMERICAN Lab Sample ID:

84115

0910412-001

WEST

Client Sample ID: CUB1W-1

ANALYTICAL Collection Date:

e: 10/13/2009

LABORATORIES Received Date:

10/22/2009

	TOTAL METALS			Method	Reporting	Analytical	
	Analytical Results	Units	Date Analyzed	Used	Limit	Result	Qual
463 West 3600 South	Arsenic	mg/kg-dry	10/28/2009 4:03:00 PM	SW6010C	6.1	18	,
Salt Lake City, Utah	Lead	mg/kg-dry	10/28/2009 4:03:00 PM	SW6010C	6.1	37	,

^{3 -} Matrix spike recoveries and/or high RPDs indicate suspected sample non-homogeneity. The method is in control as indicated by the LCS.

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Jose Rocha QA Officer

> > > Report Date: 10/29/2009 Page 2 of 7



INORGANIC ANALYTICAL REPORT

Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

Lab Sample ID: AMERICAN

0910412-002

WEST

ANALYTICAL Collection Date:

Client Sample ID: SLB1W-1 10/13/2009

LABORATORIES Received Date:

10/22/2009

•	TOTAL METALS			Method	Reporting	Analytical	
	Analytical Results	Units	Date Analyzed	Used	Limit	Result	Quai
463 West 3600 South	Arsenic	mg/kg-dry	10/28/2009 4:19:00 PM	8W6010C	5.3	80	
Salt Lake City, Utah		mg/kg-dry	10/28/2009 4:19:00 PM	SW6010C	5.3	1,200	
84115	·····	·····					

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross **Laboratory Director**

> > Jose Rocha **QA Officer**

> > > Report Date: 10/29/2009 Page 3 of 7



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687

e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0910412

Project: Richardson Flat

Dept: ME

SampType: LCS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	Analysis %RPD RPD Limit Qualifiers Date
LCS-3618	Arsenic	mg/kg	SW6010C	16	20.00	0	81.8	75-125	10/28/2009
LCS-3618	Lead	mg/kg	SW6010C	19	20.00	1.054	91.1	75-125	10/28/2009

Report Date: 10/29/2009 Page 4 of 7



463 West 3600 South
Salt Lake City, Utah 84115
(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687
e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0910412

Project: Richardson Flat

Dept: ME

SampType: MBLK

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
MB-3618	Arsenic	mg/kg	SW6010C	< 5.0				•			10/28/2009
MB-3618	Lead	mg/kg	SW6010C	< 5.0							10/28/2009

Report Date: 10/29/2009 Page 5 of 7



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha OA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0910412

Project: Richardson Flat

Dept: ME

SampType: MS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifier	Analysis s Date
0910412-001AMS	Arsenic	mg/kg-dry	SW6010C	37	24.93	17.95	75.7	75-125			10/28/2009
0910412-001AMS	Lead	mg/kg-dry	SW6010C	75	24.93	37.44	150	75-125			10/28/2009

^{* -} Matrix spike recoveries and/or high RPDs indicate suspected sample non-homogeneity. The method is in control as indicated by the LCS.

Report Date: 10/29/2009 Page 6 of 7



463 West 3600 South
Salt Lake City, Utah 84115
(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687
e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0910412

Project: Richardson Flat

Dept: ME

SampType: MSD

	•													
					Amount	Original		•				Analysis		
Sample ID	Analyte	Units	Method	Result	Spiked	Amount	%REC	Limits	%RPD	RPD Limit	Qualifiers	Date		
0910412-001AMSD	Arsenic	mg/kg-dry	SW6010C	34	23.86	17.95	68.7	75-125	7.03	20	3	10/28/2009		
0910412-001AMSD	Lead	mg/kg-dry	SW6010C	61	23.86	37.44	99.0	75-125	20.2	20	3	10/28/2009		

^{2 -} Mairtx spike recoveries and/or high RPDs indicate suspected sample non-homogeneity. The method is in control as indicated by the LCS.

Report Date: 10/29/2009 Page 7 of 7



American West Analytical Laboratories

WORK ORDER Summary

28-Oct-09

Work Order: 0910412

WO Type: Standard

Client ID:

UNI100

Contact:

Kerry Gee

Project:

Richardson Flat

QC Level: LEVEL II+

Reviewed by Samantha Broadhead on 10/22/2009

Comments:

2 day RUSH added 10/28/09 per Todd Leeds. RMC client: Email copy of report to Todd Leeds; QC2+;

Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hld	MS	SEL	Sub	Storage
0910412-001A	CUB1W-1	10/13/2009	10/22/2009 5:56:49 PM	10/30/2009	Soil	3051A-ICPMS-PR					df - met
	SEL Analytes: AS PB			10/30/2009		6010C-S			V		df - met
			***************************************	10/30/2009		PMOIST					df - met
0910412-002A	SLB1W-1			10/30/2009		3051A-ICPMS-PR					df - met
	SEL Analytes: AS PB			10/30/2009		6010C-S			Ø		df - met
				10/30/2009		PMOIST					df - met

American West Analytical Laboratories

WORK ORDER Summary

Work Order: 0910412

22-Oct-09

WO Type: Standard

Client ID:

UNI100

Contact:

Kerry Gee

Project:

Richardson Flat

QC Level: LEVEL II+

Comments:

RMC client: Email copy of report to Todd Leeds; QC2+;

数

Reviewed by on

		•		HOV-DB		·						_ spo
Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hld	MS	SEL	Sub	Storage	
0910412-001A	CUBIW-1	10/13/2009	10/22/2009 5:56:49 PM	11/5/2009	Soil	3051 A-ICPMS-PR					df - met	
				11/5/2009	-	6010C-S			V		df - met	
	SEL Analytes: AS PB		*						_			
-	<u></u>			11/5/2009		PMOIST					df - met	
0910412-002A	SLB1W-1			11/5/2009		3051A-ICPMS-PR					df - met	
				11/5/2009		6010C-S			✓		df - met	
	SEL Analytes: AS PB				•	•						
				11/5/2009		PMOIST					df - met	

RMC

Laboratory Services Request Form

0910412

L'CLIENTINFORMATION CONTRACTOR STATE OF THE	SEND REQUESTS TO:
Client Name: UNITED PARK CITY MINES	American West
Client Address: PO BOX 1450 PARK CITY, UT 84060	Analytical Laboratories
*,	463 W. 3600 South
Client Phone: 435-608-0954	Salt Lake City, UT
Client Fax: 435-615-1239	84115
II ACCOUNT INFORMATION	
Account Name:	Patrick Noteboom
Sample Questions- Todd Leeds RMC- 801-255-2626	Phone # (801) 750-2585
	Fax (801)-263-8687
TAT: Standard P.O. No: Richards	ion flat
III REPORT INSTRUCTIONS	
Report Results To: KERRY GEE- UPCM AND TODD LEEDS - RMC FAX-255-	
Report Address: PO BOX 1450 PARK CITY UT 84060 AND TODD LEEDS, RMC, 8138 S. S.	
Please Forward Results By: US Mail (X) Fed Ex () Fax (X) Othe Todd@rmc-ut.com
Services Requested below are required no later than	(date)
IV TYPE OF SERVICE REQUESTED	
Please analyze the enclosed environmental samples for:	
Sampling No.	
Field Sample Date & Time of	Analysis
No./Description Cont.	Requested
CURI W-1 10/13/09 1	Ph, As
56 R2W-1 10/13/09	Pb; As
	,
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	0910412	
Lab Set ID:	09110912	

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Procedure: 1) Pour a small amou	nt of sample in the san	nple lid		/3	///	•							٠,	•	

2) 3) 4) 5) 6) 7)

Pour a small amount or sample in the sample had Pour sample from Lid gently over wide range pH paper Do Not dip the pH paper in the sample bottle or lid if sample is not preserved properly list its extension and receiving pH in the appropriate column above Flag COC and notify client for further instructions Place client conversation on COC Samples may be adjusted at client request



Kerry Gee

AMERICAN

United Park City Mines Co.

PO Box 1450 WEST ANALYTICAL

Park City, UT 84060-

LABORATORIES

TEL: (435) 608-0954

FAX (435) 615-1239

RE: Richardson Flat

463 West 3600 South Salt Lake City, Utah 84115

Dear Kerry Gee:

Lab Set ID: 0911289

American West Analytical Laboratories received 2 sample(s) on 11/16/2009 for the analyses presented in the following report.

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

All analyses were performed in accordance to The NELAC Institute protocols unless noted otherwise. American West Analytical Laboratories is certified by The NELAC Institute in the following states: Utah, Colorado, Idaho, and Texas. Certification document is available upon request. If you have any questions or concerns regarding this report please feel free to call.

Kyle F. Gross Laboratory Director The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitaion limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit.

Jose Rocha **QA** Officer

> This is a revised report for a report originally issued 11-17-2009. By client request, Arsenic is being reported.

Thank You,

Approved by:

Report Date: 11/17/2009 Page 1 of 7



INORGANIC ANALYTICAL REPORT

Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Richardson Flat

AMERICAN

Lab Sample ID: 0911289-001

WEST

Client Sample ID: RFSL-111609-A 11/16/2009 11:30:00 AM

ANALYTICAL **LABORATORIES**

11/16/2009

Collection Date:

Received Date:

TOTAL METALS			Method	Reporting	Analytical	
Analytical Results	Units	Date Analyzed	Used	Limit	Result	Qual
Arsenic	mg/kg-dry	11/16/2009 4:29:00 PM	SW6010C	5.7	13	^
Lead	mg/kg-dry	11/16/2009 4:29:00 PM	SW6010C	5.7	77	-3

463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Jose Rocha **QA** Officer

> > > Report Date: 11/17/2009 Page 2 of 7

^{^-} Reissue of a previously generated report. Information has been added, updated, or revised. Information herein supersedes that of the previously issued reports.

^{*-} Matrix spike recoveries and/or high RPDs indicate suspected sample non-homogeneity. The method is in control as indicated by the LCS.



INORGANIC ANALYTICAL REPORT

Client:

United Park City Mines Co.

Contact: Kerry Gee

Project:

Lab Sample ID:

Collection Date:

Richardson Flat

AMERICAN

0911289-002

WEST

Client Sample ID: RFSL-111609-B

ANALYTICAL LABORATORIES

11/16/2009 11:40:00 AM

Received Date: 11/16/2009

TOTAL METALS	•	Method	Reporting	Analytical			
Analytical Results	Units	Date Analyzed	Used	Limit	Result	Qual	
Arsenic	mg/kg-dry	11/16/2009 4:46:00 PM	SW6010C	5.8	14	^	
Lead	mg/kg-dry	11/16/2009 4:46:00 PM	SW6010C	5.8	150		

463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687 e-mail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Jose Rocha QA Officer

> > > Report Date: 11/17/2009 Page 3 of 7

^{^ -} Reissue of a previously generated report. Information has been added, updated, or revised. Information herein supersedes that of the previously issued reports.



463 West 3600 South
Salt Lake City, Utah 84115
(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687
e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0911289

Project: Richardson Flat

Dept: ME

SampType: LCS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD RPD Limit Qualifiers	Analysis Date
LCS-3899	Arsenic	mg/kg	SW6010C	20	20.00	0	100	75-125	11	1/16/2009
LCS-3899	Lead	mg/kg	SW6010C	19	20.00	0.1415	93.7	75-125	11	1/16/2009

Report Date: 11/17/2009 Page 4 of 7



463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0911289

Project: Richardson Flat

Dept: ME

SampType: MBLK

Sample ID	Analyte	Ųnits	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	Analysis RPD Limit Qualifiers Date
MB-3899	Arsenic	mg/kg	SW6010C	< 5.0						11/16/2009
MB-3899	Lead	mg/kg	SW6010C	< 5.0				<u> </u>		11/16/2009

Report Date: 11/17/2009 Page 5 of 7



463 West 3600 South
Salt Lake City, Utah 84115
(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687
e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0911289

Project: Richardson Flat

Dept: ME

SampType: MS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Qualifiers	Analysis Date
0911289-001AMS	Arsenic	mg/kg-dry	SW6010C	37	23.84	13.18	99.0	75-125			11/16/2009
0911289-001AMS	Lead	mg/kg-dry	SW6010C	- 130	23.84	77.20	235	75-125		3	11/16/2009

⁻ Matrix spike recoveries and/or high RPDs indicate suspected sample non-homogeneity. The method is in control as indicated by the LCS.

Report Date: 11/17/2009 Page 6 of 7



463 West 3600 South Sait Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com Kyle F. Gross Laboratory Director

Jose Rocha QA Officer

QC SUMMARY REPORT

CLIENT: United Park City Mines Co.

Lab Set ID: 0911289

Project: Richardson Flat

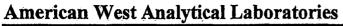
Dept: ME

SampType: MSD

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qualifier	Analysis 5 Date
0911289-001AMSD	Arsenic	mg/kg-dry	SW6010C	36	23.07	13.18	101	75-125	1.00	20		11/16/2009
0911289-001AMSD	Lead	mg/kg-dry	SW6010C	89	23.07	77.20	52.6	75-125	39.4	20	3	11/16/2009

¹⁻ Matrix spike recoveries and/or high RPDs indicate suspected sample non-homogeneity. The method is in control as indicated by the LCS.

Report Date: 11/17/2009 Page 7 of 7







WORK ORDER Summary

Add Arseniu per Toda

17-Nov-09

Work Order: 0911289

WO Type: Standard

Client ID:

UNI100

Contact:

Kerry Gee

Project:

Richardson Flat

QC Level: LEVEL II+

Reviewed by Denise Bruun on 11/16/2009

Comments:

RMC client: Email copy of report to Todd Leeds; QC2+; Next Day Rush; Added As per Todd, 11/17/2009.;

Sample ID	Client Sample ID	Date Collected	Date Received	Date Due	Matrix	Test Code	Hld	MS	SEL	Sub	Storage
0911289-001A	RFSL-111609-A	11/16/2009 11:30:00 AM	11/16/2009 1:20:47 PM	11/17/2009	Soil	3051A-ICPMS-PR					df - met
	SEL Analytes: AS PB			11/17/2009	. •	6010C-S			Ø		df - met
<u> </u>	·	· .		11/17/2009		PMOIST					df - met
0911289-002A	RFSL-111609-B	11/16/2009 11:40:00 AM		11/17/2009		3051A-ICPMS-PR					df - met
	SEL Analytes: AS PB		· · · · · · · · · · · · · · · · · · ·	11/17/2009		6010C-S			V		df - met
	<u></u>			11/17/2009	······································	PMOIST					df - met

American West Analytical Laboratories



emailed 2

WORK ORDER Summary

16-Nov-09

Work Order: 0911289

WO Type: Standard

df - met

Client ID:

UNI100

Contact:

Kerry Gee

Project:

Richardson Flat

QC Level: LEVEL II+

Reviewed by on

Comments:

RMC client: Email copy of report to Todd Leeds; QC2+; Next Day Rush;

Sample ID Hid MS SEL Sub Storage Client Sample ID **Date Collected** Test Code Date Received Date Due Matrix 0911289-001A RFSL-111609-A 11/16/2009 11:30:00 AM 11/16/2009 1:20:47 PM 11/17/2009 Soil 3051A-ICPMS-PR df - met df - met 11/17/2009 6010C-S SEL Analytes: PB 11/17/2009 **PMOIST** df - met 0911289-002A RFSL-111609-B 11/16/2009 11:40:00 AM 3051A-ICPMS-PR df - met 11/17/2009 11/17/2009 6010C-S df - met SEL Analytes: PB

11/17/2009

PMOIST

RMC

Laboratory Services Request Form

0911289

L'ELIENT INFORMATION	A		Commence of the Control		. Fin	SEND REQUESTS TO:
Client Name:					St. A. L. St. St. St. St. St. St. St. St. St. St	American West
Client Address:		PARK CITY, U	T 84060			Analytical Laboratories
						463 W. 3600 South
Client Phone:	435-608-0954		_			Salt Lake City, UT
Client Fax:	435-615-1239					84115
HUAGGOLINT INFORMA	TION					
Account Name:						Patrick Noteboom
Sample Questions-	Todd Leeds	RMC- 801-255	-2626			Phone # (801) 750-2585
						Fax (801)-263-8687
TAT:		:	P.O. No:			
IL REPORT INSTRUCTI			<u> </u>			
Report Results To:						
Report Address:						
Please Forward Results	By:	US Mail (X)	OFed Ex ()	Fax ()	() Othe	Todd@rmc-ut.com
Services Requested be	low are required	no later than	Kush -a	46		(date)
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K 104-	11609-B		1/16/05 11/9Dan	7	Pb.	
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Relinquished by:	FIL	:	Date 1/16/09		Elgen	Airbill #
Received by:	8		Date 11/16/09	Time 13		
Received for lab by:			1111			Custody Seal Intact?
I TOUCHYOU TOT IND UY,			Date.	Time		Yes No

Lab Set ID: UIII LOI	Lab Set ID:	091	1289	
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☑ Ambient			Unbi	oken on C	uter pag	kage					Amber G					
☐ Chilled	/			Yes □N	10 ZN	/A .		O AWA	L Si	ipplied \	/OA/TO	C/TOX	Vials			•
Temperature	19.8 °C			Present or	Sample						Headspa			ice		
Rec. Broken/Leak	ing 🛛 Yes 🗹 No	□ N/A		Yes D	To DN	/A	Ī				lied Conf					•
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Bottle Type	Preservative	All pHs OK	. 	<u> </u>	 		<u> </u>				ļ	ļ			<u> </u>	
Ammonia	pH <2 H₂SO₄	· ·	<u>`</u>		1		<u> </u>			. ,	1				-	
COD	pH <2 H ₂ SO ₄				 		 .	-+								ļ
Cyanide Metals	PH >12 NaOH pH <2 HNO₃			 		 		-++			112				 	
NO ₂ & NO ₃	pH <2 H ₂ SO ₄				1 .					,				 		
Nutrients	pH <2 H ₂ SO ₄			•	-	- : -				<u> </u>					 	
O&G	pH <2 HCL	<u> </u>			 	 			 			 				
Phenols	pH <2 H ₂ SO ₄	· · · · · · · · · · · · · · · · · · ·		 	+	 	├		+	· · · · ·			 	 	 	
Sulfide	pH > 9NaOH, ZnAC			+	+	 			+		 			-	 	
TKN	pH <2 H ₂ SO ₄			 	+ -	 	 		+						-	
TOC	pH <2 H₃PO₄	- 			1		 		+		 					
TPO ₄	pH <2 H ₂ SO ₄	 	- l				٠		+		ļ. — <u> </u>	†		 	 	
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Procedure: 1 2 3 4	Pour sample from L Do Not dip the pH;	nt of sample in the sar id gently over wide ra paper in the sample be served properly list its	nge pH pape ottle or lid		pH in the	appropriat	te col	umn abo	ve	SM						

Flag COC and notify client for further instructions Place client conversation on COC Samples may be adjusted at client request 5) 6) 7)



Applied Geotechnical Engineering Consultants, Inc.

December 3, 2009

United Park City Mines PO Box 1450 Park City, UT 84060

Attention:

Kerry Gee

EMAIL: kcgee@unitedpark.com

Subject:

Piezometer Measurements

Richardson Flat RDA

State Road 248 Near State Road 40

Summit County, Utah Project No. 1060486

Dear Kerry:

Applied Geotechnical Engineering Consultants, Inc. (AGEC) was requested to install and measure piezometers at the Richardson Flat RDA located at State Road 248 near State Road 40 in Summit County, Utah.

AGEC previously evaluated the stability of the embankment for the mine tailings pond at the site. We presented our findings and recommendations in a report dated October 4, 2001 under Project No. 1010603.

Information regarding the installation of the piezometers and initial measurements of the piezometers was provided in a letter dated June 2 and October 12, 2006 under Project No. 1060486.

PROPOSED CONSTRUCTION

We understand that up to approximately 8 feet of fill will be placed in the tailings pend area. Several feet of fill have been placed in the west portion of tailings pend since the piezometers were installed. The fill is expected to result in an increase in the pore water pressure in the tailings. The pore water pressure would decrease over time as the tailings consolidate under the load of the new fill. The pore water pressure is planned to be monitored during and after fill placement in order to minimize the potential for instability of the tailings pend embankment.

PIEZOMETERS INSTALLATION

Pneumatic piezometers were installed at five locations on May 11 and 12, 2006. The location of the piezometers is shown graphically on Figure 1. The piezometers ranged in

United Park City Mines December 3, 2009 Page 2

depth from 14 to 19 feet below the ground surface at the time of installation. The locations and depths of the piezometers were determined by representative of Golder and Associates.

The piezometers were installed by drilling a boring at each location to the installation depth. The borings were drilled using 8-inch diameter hollow-stem auger powered by an all-terrain drill rig. Pneumatic piezometers were inserted into the borings through the center of the auger. The annular space around the piezometers was backfilled with silica sand up to a depth of approximately 3 to 5 feet below the ground surface. Bentonite chips were placed above the silica sand up to the ground surface.

A large diameter pipe was placed over each piezometer location to protect the piezometers from damage. A locking cover was constructed for each pipe.

PIEZOMETER MEASUREMENTS

Each of the piezometers consists of two tubes which are connected to a transducer. The pore water pressure around the piezometer transducer is measured by allowing air to flow down one of the tubes to the transducer at depth. The air pressure is increased until a diaphragm in the transducer is pushed away from the end of the tube which allows the air to flow up the return tube back to the ground surface. The air supply is shut off and the air pressure in the tubing decreasing until the diaphragm closes. The air pressure remaining in the tube is measured as the pore water pressure.

Piezometers measurements were obtained periodically between May 18, 2006 and August 5, 2009. The piezometer measurements are shown graphically on Figures 2 through 6. Piezometer PZ-3 was malfunctioning between March 2007 and August 2008.

Measurements obtained from the piezometers were compared to monthly precipitation data for the area. The comparison is shown graphically on Figure 7.

FILL PLACEMENT

Up to approximately 3½ feet of fill was placed in the area of Piezometers PZ-1 through PZ-4 between Fall 2006 and Spring 2007. Approximately 4 to 6 feet of additional fill was placed in the area between Piezometers PZ-3 and PZ-4 between late 2007 and early 2008. No fill has been placed in the area of Piezometer PZ-5.

CONCLUSION AND RECOMMENDATIONS

Based on the conditions observed at the time of our site visits, piezometer measurements and our experience in the area the following conclusion and recommendations are given:

 Five piezometers were installed in the area of the tailings pond. The piezometers were measured periodically between May 18, 2006 and August United Park City Mines December 3, 2009 Page 3

5, 2009. The piezometer measurements indicate that the ground water at the site is highest in early spring and lowest in late fall and winter.

- The fluctuations in the ground water levels appear to be seasonal and are likely affected by the spring snow melt in the area.
- 3. No significant pore pressure buildup is being measured by the piezometers. This is likely because pore water pressure in the soil in which the piezometers are measuring water pressure dissipates faster than the interval of piezometer readings.
- 4. Consideration should be given to performing additional measurements of the piezometers. If additional fill will be placed near the piezometers, we recommend that the piezometers be measured more frequently to determine if the fill placement is resulting in a sufficient rise in pore pressure to be a concern.

LIMITATIONS

This letter has been prepared in accordance with generally accepted soil and foundation engineering practices in the area for the use of the client. The recommendations given in this letter are based conditions observed at the time of our site visits, piezometers measurements obtained at the site and our experience in the area. If the subsurface conditions or ground water elevations are found to be significantly different from what is described in this letter, we should be notified to reevaluate the recommendations given.

If you have any questions or we can be of further service, please call.

Sincerely,

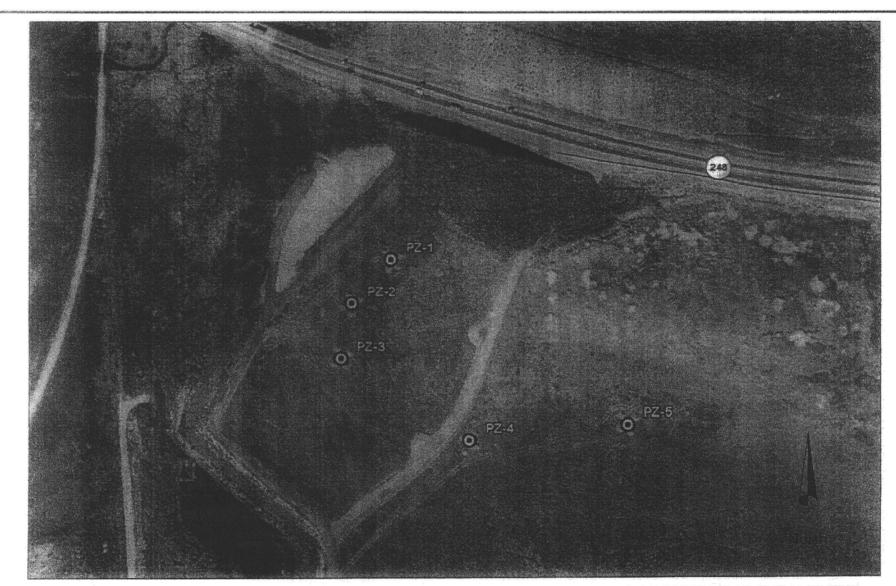
APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.

Benjamin Q. Coray, P.I

Reviewed by SDA, P.E.

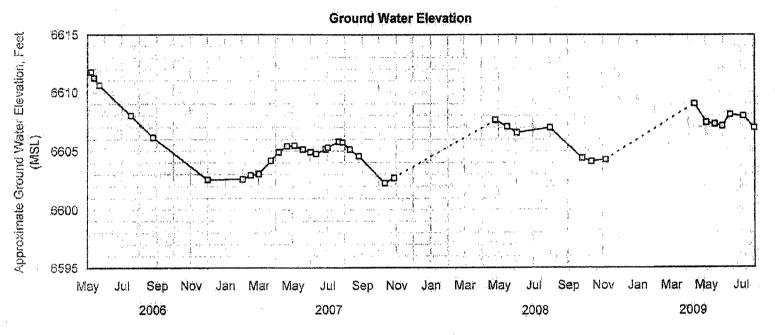
BQC/dc

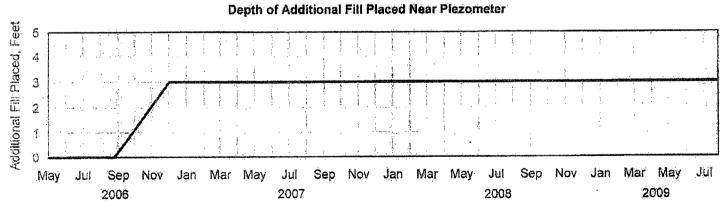
Enclosures



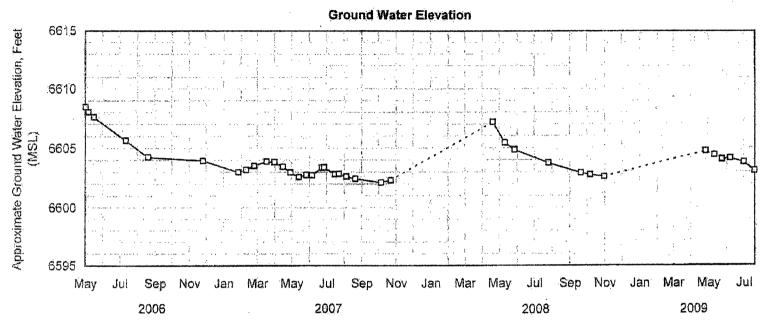
RICHARDSON FLAT EMBANKMENT SUMMIT COUNTY, UTAH

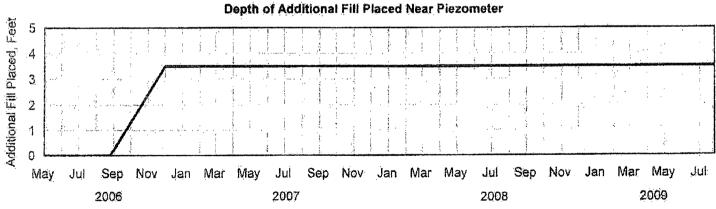
Richardson Flat Piezometer PZ-1



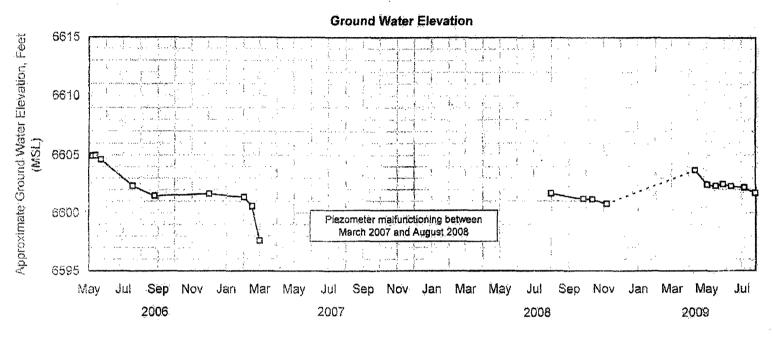


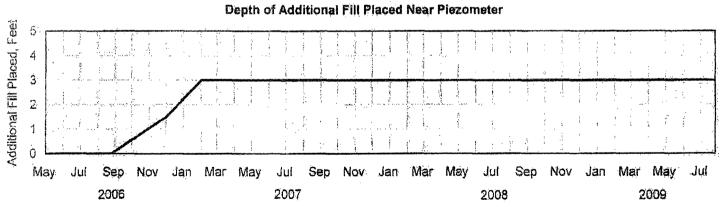
Richardson Flat Piezometer PZ-2



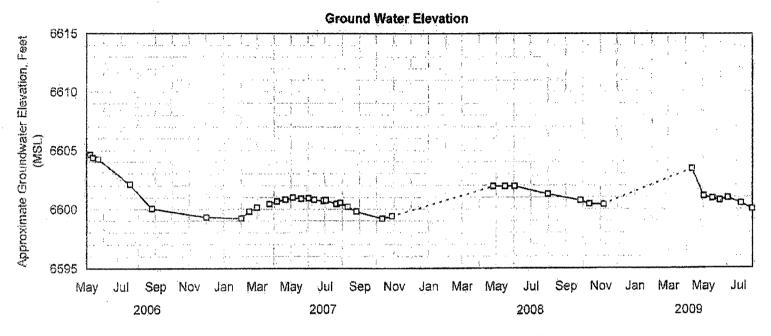


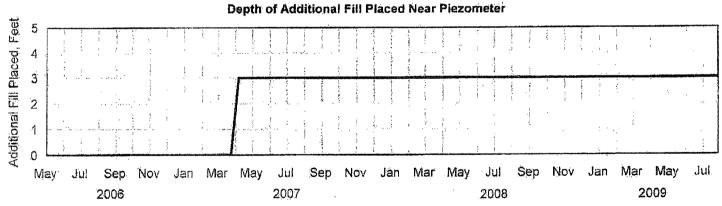
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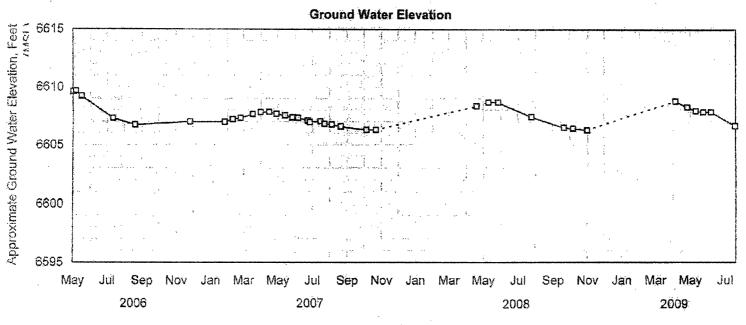


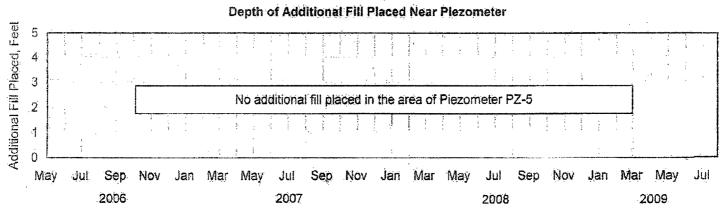
Richardson Flat Piezometer PZ-4



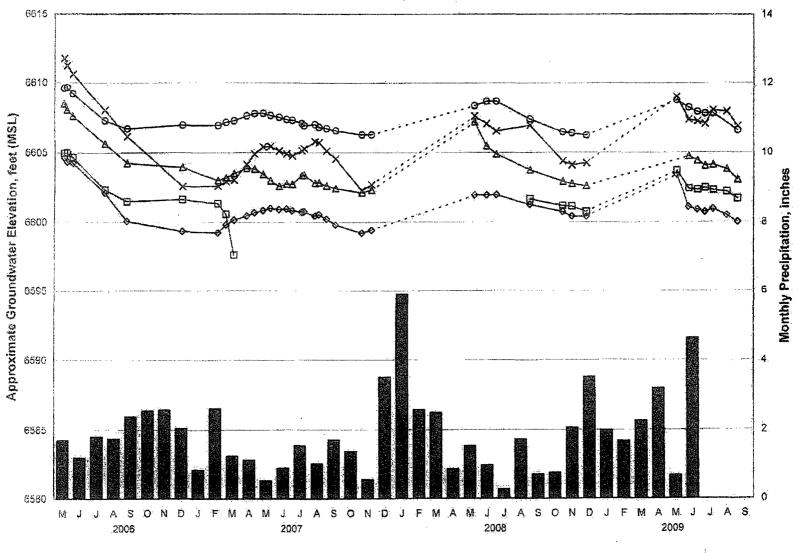


Richardson Flat Piezometer PZ-5





Groundwater Elevation vs. Monthly Precipitation Richardson Flat Piezometers



Monthly Precipitation —X—PZ-1 —A—PZ-2 —B—PZ-3 — PZ-4 —B—PZ-5

From: Hughes, John [mailto:John_Hughes@los.doi.gov]

Sent: Wednesday, December 23, 2009 11:35 AM

To: John Isanhart; douglaspreagan@aol.com; todd@rmc-ut.com; jim@rmc-ut.com;

kcgee@unitedpark.com

Subject: Revegetation resources for Richardson Flat

I apologize for not getting back to all of you sooner, but I have assembled some files pertaining to cottonwood and willow planting techniques that you might find useful. Given the fact that relatively few willows and cottonwoods are found along Silver Creek under natural conditions, I don't expect that we can cover up the site with woody plantings; however, these techniques might be a good way to ensure at least limited survival for plantings adjacent to wetland areas.

As we discussed during our site visit, I think that the loss of the seasonal wetland in unit F-8 is not a major issue, as long as mountain big sagebrush habitat is restored in units F-4 and F-5 (and parts of F-7A?). If you need any recommendations for the upland portion of the site please do not hesitate to contact me, and I hope you all have a Merry Christmas.

John P. Hughes

DOI NRDAR Program Office

Restoration Support Unit

P.O. Box 25007 (D-110)

Denver, CO 80225

(303) 445-3889 office

(303) 445-3887 FAX



Container grown seedlings

in climatically controlled greenhouses that are Our wetland plant seedlings are initially started ideally suited for the germination of native be pre-adapted for the climatic conditions that extremes of temperature. HYDRA has found lishment and have the highest transplant success. The seedlings grow rapidly, thereby wetland plants, and then moved outdoors for hardening-off. This insures that the plants will can cause plant stress such as dry winds or that container grown seedlings provide a highly preventing soil erosion and helping to meet mitieffective and reliable means of wetlands estabgation requirements, or water quality standards.



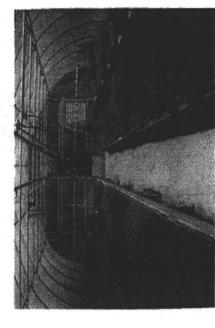
and 30 species of woody trees and shrubs. The HYDRA'S wetland and riparian plant nursery grows more than 80 species of herbacious wetland plants wetland plants are container grown from source identified seed. HYDRA can custom grow plants for your wetland project and deliver or ship plants anywhere in the United States. We also offer installation in the western U.S.

HYDRA

degree in aquatic ecology from the University certified Senior Ecologist (Ecological Society of America) and has a Master of Science was founded by Ross Coleman in 1989. Ross is a Professional Wetland Scientist (Society of Wetland Scientists) and is a of New Mexico.

committed to the restoration of wetland and riparian environments and the creation of quality improvement. HYDRA's staff and professional associates include botanists, wetlands for wildlife habitat and water HYDRA is a professional services firm ecologists, engineers, planners, CAD technicians, and nursery personnel.

cover painting by Barbara Coleman



One of HYDRA's wetland plant greenhouses



Wildlife wetland along the Rio Grande planted by

to see our plant species and price list-For more information and isit our website at

www.hydraaquatic.com

or call (505) 281-5749.





Riparian/Wetland Project Information Series No. 17 June, 2001

Waterjet Stinger:

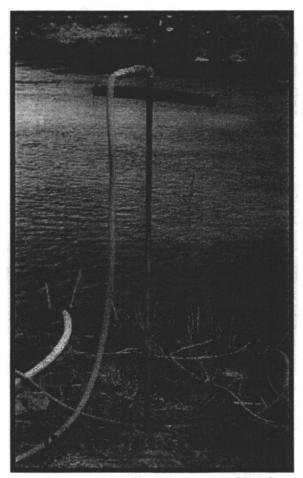
A tool to plant dormant unrooted cuttings of willows, cottonwoods, dogwoods, and other species

J. Chris Hoag, Wetland Plant Ecologist, Boyd Simonson, Biological Technician; Brent Cornforth, Biological Technician, and Loren St. John, PMC Team Leader. USDA - Natural Resources Conservation Service, Plant Materials Center, Aberdeen, ID 83210

Introduction

Opportunities for riparian revegetation around the nation are numerous. Planting dormant unrooted cuttings often called pole plantings, post plantings, or live stakes is one technique that is often recommended for streambank stabilization and riparian buffer planting. This method is limited to species that can easily sprout from hardwood cuttings, such as: willows, cottonwoods, and dogwoods. There are other species that will sprout from hardwood cuttings, but do not root as readily.

Dormant unrooted cuttings are used because they are easy to harvest, easy to plant, inexpensive, and effective. In the arid and semi-arid West, it is extremely important that any plant that is installed in a riparian zone have its roots in the lowest watertable of the year. This is often difficult when using bareroot or containerized plants especially when the riparian zone has been dewatered to the point that the water table may be several feet below the soil surface. Unrooted cuttings have been planted as deep 12 ft (average depth is about 5-6 ft) by the Riparian/Wetland Plant Development Project at the Aberdeen PMC using a long bar attached to a backhoe (Hoag



and Ogle 1994). Most riparian and stream protection projects require planting depths of 3-6 ft. The biggest problem we faced was finding a method and developing equipment that could dig a hole more than 3-4 ft deep quickly and efficiently. The Waterjet Stinger is the result of this equipment development effort.

To plant unrooted cuttings successfully, the bottom of the cutting should be placed about 8-12 in into the lowest watertable of the year. The top of the cutting should extend out of the ground at least 10-12 in or high enough to be out of the shade cast by surrounding vegetation such as grasses or forbs. This allows the bottom of the cutting to act like a straw and pull water up the cutting keeping the roots, stems and leaves hydrated. In some riparian zones, the lowest water table of the year can be several feet deep.

Waterjet Stinger



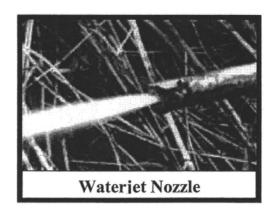
The Waterjet Stinger was specially designed to use high-pressure water to hydrodrill a hole in the ground to plant unrooted hardwood cuttings into riparian revegetation. This is not new technology, in fact, it has been around for a long time. Oldham (1989) described a water drill that he used to drill holes in the ground to plant stem and pole cuttings 4-5 ft deep. His hydrodriller was a steel pipe that was beveled at the bottom and was hooked up to a "water tank (spray rig) or portable pump." Drake and Langel (1998) reported using a water jet tool to plant willow cuttings. They designed a nozzle that is made out of stainless steel welded to a steel pipe. They used a high-pressure pump and the

nozzles to plant cuttings over 2 meters deep. An engineering technician in Manitoba, Canada (Andrews, personal communication) described working with a water jet to drill holes for geotechnical test holes ten years ago. He indicated that they had taken a steel pipe and pounded the end flat to increase the water pressure. These earlier jets did not last very long because the pounding tended to weaken the steel.

The advantages of using the waterjet stinger to drill a hole for planting unrooted willow and cottonwood cuttings are:

- 1) simple to operate and transport
- 2) little training necessary to operate
- 3) hydrodrilling the planting hole is fast
- 4) plant large number of cuttings in a short period of time
- 5) allows cutting to be planted directly into a wet environment
- allows for saturated soil conditions to surround the cutting for a longer period of time
- 7) liquefied soil will settle around the cutting eliminating air pockets in the rooting zone

Based on a request from Scott Henderson, an Idaho NRCS Field Office employee, and others, Boyd

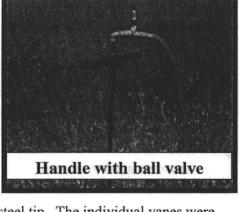


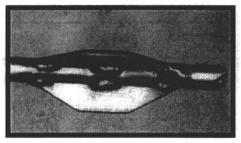
Simonson, PMC Biological Technician, used the paper written by Drake and Langel (1998) and attempted to modify their design to better fit the coarse soils in the Intermountain West. He started with the actual probe itself. A local machinist used the detailed drawing to build the nozzle out of stainless steel and welded it to a ½ in steel pipe. Boyd added a T-handle at the top to help with the planting operation and a ball valve at the handle to turn the water on and off (see Appendix A).

After testing in the field, we decided to add a set of vanes to be bottom on one of the probes. Three vanes

were welded to the probe pipe directly above the stainless steel tip. The individual vanes were about four inches long, tapering down to the nozzle, and about 5/8 inch tall. The vanes provide several benefits. They open the hole up all the way down to accept wider diameter cuttings.

This is especially true in compacted layers like clay. They also allow the user to nudge rocks slightly out the way in the hole. With the smooth pipe, it is almost impossible to get any leverage on rocks. For silt soils, the vanes are a real help. With cobbly soils, it does not provide a major advantage. We work in a combination of silts and gravels so we put vanes on one probe and left the other without vanes.





It took quite a bit of research to come up with the right size pump. Drake and Langel (1998) describe a "cube" pump, but we had difficulty finding anything with that name. We determined that the basic specifications for the pump were:

- 1) gasoline powered
- 2) small enough to fit on the back of an ATV
- 3) output of at least 80 psi or higher
- 4) 120 gallons/minute output
- 5) vertical lift of at least 18 ft

There are many different pumps that meet these specifications available on the market.

We did try a 1600-psi pressure washer thinking that it was ready made for this type of application. The main problem is that pressure washers do not put out enough water volume for this application. The pressure washers typically put out about 2-3 gpm while the high-pressure pump puts out 120 gpm (about 12-15 gpm at the nozzle). Pressure washers have more than enough water pressure, but they tend to blow all the soil out of the hole for the first couple of inches making it pretty messy. After the hole is drilled, there is very little water left in the hole to hydrate the willow cuttings. We do not recommend using a pressure washer for this application.

Next, Boyd felt that for safety's sake, a pressure relief valve should be installed so when both waterjets were shut off, the water from the pump would bypass back into the stream or other

water source. This would decrease the pressure on the pump and eliminate turning the pump on and off. A manifold was designed to fit on the pump to allow the water to flow from the stream to either the waterjet stingers or to the bypass hose. When a certain internal pressure is reached inside the manifold, the water will divert to the bypass hose and back into the stream automatically. An additional benefit to the pressure relief valve was that it allows one to release air out of the system. This made the priming go much faster.

The garden hose quick coupler manifold allows two waterjets to run simultaneously. It is attached to the main manifold just past the pressure relief valve. Quick couple attachments (available at most lawn and garden stores) are used to keep the connections simple, reduce the possibility of stripping the treads on the hose ends, and to allow the hoses to be hooked up in either direction. Water is delivered through heavy-duty 5/8 in garden hoses with a pressure rating of 100 psi that are 100 ft long. The hoses run from the garden hose quick couple manifold to the waterjets.



At the planting site, the hoses are laid out parallel to the stream channel. The two waterjets can be operated with two separate crews. One crewmember runs each waterjet and the other crewmembers transport the cuttings and push them into the holes after they are hydrodrilled. As the holes are hydrodrilled and planted in the 200 ft length, the ATV with the waterjet stinger pump is driven further down the streambank and the process starts all over again. If the streambank is too high and the lift is too great to get water from the stream to the pump, the pump can be dismounted from the ATV and placed on a flat shelf that is cut right into the streambank. This way the pump is placed closer to the water, lift is reduced, and pressure increased at the nozzles.

Planting Process

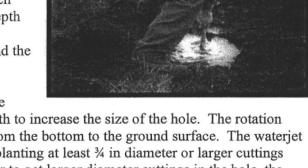
Once the pump is set up and pushing water to the waterjets, hydrodrilling holes can begin. Planting sites with vegetation are scalped down to mineral soil to get rid of competing above ground biomass. The waterjet is placed in the center of the scalp and the ball valve is turned on. At this point most beginning users get nervous about being splashed with water. We have found that water rarely splashes up, rather it tends to bubble as it liquefies the soil. Splashing might occur if the hydrodrilling is attempted on soils that are crusted or have a hard layer. However, as soon as the waterjet goes through the surface layer of soil, the splashing is eliminated (except in rocky soils).



After turning on the ball valve and the water starts jetting out of the nozzle, the waterjet will slowly start sinking into the ground. If a hard layer is encountered, the waterjet will stop. If the user leaves the waterjet in place and let the water work on the layer, eventually it will go through it. We have demonstrated this with several demonstration projects from a site with a 6 in hard calcic layer to a site with a 2 ft thick layer of decomposed granite. If medium sized rocks (with

lots of fines around them) are encountered, the user must wiggle the jet back and forth until the water can find a way around it. This does make a larger hole below the surface, but the liquefied soil will normally settle back into place after the cutting has been installed.

As the waterjet liquefies the soil, it will continue down until it hits something it cannot cut through, the T-handle hits the ground, or the user stops. We have held the waterjet at a stationary point to have the water cut further into the soil. We have been able to duplicate Drake and Langel's (1998) depth of 6.6 ft (2 m). The depth the waterjet will penetrate depends mainly on the soil texture and the length of the probe.



As the user pulls the waterjet back up out of the hole, the nozzle should be rotated back and forth to increase the size of the hole. The rotation should continue the entire length of the hole from the bottom to the ground surface. The waterjet probe is ½ in diameter and the user should be planting at least ¾ in diameter or larger cuttings (Bentrup and Hoag 1998, Hoag 1993). In order to get larger diameter cuttings in the hole, the soil needs to be liquefied all the way to the soil surface.

Once the hole has been hydrodrilled, the single cutting or a bundle of three to four cuttings can be pushed into the hole. The longer one waits to shove the cutting into the hole, the higher the chance there is to for the suspended sediment to settle to the bottom of the hole. This will limit the depth that the cutting can be pushed to.

An alternative option is to start the hole with the waterjet and then place the cutting or bundle right next to the waterjet pipe and push both the waterjet and the cuttings into the hole at the same time. If done properly, the cutting or bundle will go down as the waterjet liquefies the soil. If the cutting hits a tight spot, the operator will immediately know it and he can spiral the nozzle around a little to loosen the obstruction. A word of caution - make sure that the cutting does not extend past the nozzles



or the pressurized water will cut the bark off.

One problem that we have observed is that if there is a coarse soil layer under a layer of fine textured soil, when the waterjet drills into this coarse layer, the water in the hole will drain out into the coarse layer. This will defeat the purpose of planting the cuttings into a slurry to eliminate air pockets. Pulling the waterjet nozzle up to just above the layer will allow sediment to settle back into the bottom of the hole and seal it again.

We have found that a three-person team per waterjet works very well for the planting process. One member of the team runs the waterjet, the other two members haul the cuttings and shove them in the holes. The team members can rotate jobs through the planting day to keep everyone fresh and interested in the planting job. An extra person to transport the cuttings from the soaking location to the planting location with another ATV will speed the process up. The speed of the entire planting process will depend upon the soil, the labor force, and the cutting or bundle sizes.

Once the cutting is shoved into the hole to the depth of the low water table, the sediment will start to settle around the stem. It is important that the operator not allow significant amounts of sediment to bubble up out of the hole while drilling. The more sediment that is allowed to bubble out, the more sediment that will have to be replaced after the water moves out into the surrounding soil. After planting, the planting team needs to return to each of the stems and replace soil that bubbled out and created a depression around the stem. The depression is cause by the sediment settling in and compacting around the stem. By replacing soil around the stem, it is possible to provide more opportunity for root development in the upper part of the soil profile. When replacing the soil, use a mud slurry or tamp shoveled soil around the stem to prevent air pockets.

In cobbly soils, the waterjet stinger has the same problems as most of the other techniques that one would use to plant hardwood cuttings. In our experience, the waterjet stinger will cut down through he silt layer on top of the cobble layer and stop as it hits the cobbles. In some cases, when there are a lot of fine soils around the cobbles, the waterjet will liquefy the soil around the cobbles and allow the cobbles to shift slightly so the user can get the probe around the side of the cobble. In most cases however, it is very difficult even with the waterjet to go very deeply into a cobbly soil profile. Several other methods can be successful on cobbly soils. See "The Practical Streambank Bioengineering Guide" (Bentrup and Hoag 1998) for detailed instructions on how to install these treatments.

Safety

We would be remiss if we did not mention safety. Before the start of each planting session, safety concerns should be discussed with the planting team members. This ensures that proper safe working conditions are fresh in everyone's mind before starting to work. Potential safety problems that might occur can be discussed. The proper response to these problems can then be considered. This helps everyone know what to do if problems actually occur.

The water coming out of the waterjet nozzles is concentrated and under extremely high pressure. If the waterjet nozzle were ever pointed at a foot or hand, it could cut through a boot or glove

and into the skin. Severe damage could occur if the nozzle were pointed at the face, eyes, or any unprotected part of the body. The waterjet stinger is <u>not a toy</u> and should always be operated by, or at least supervised by, an experienced, mature adult. Caution should always be exercised around the pump. Inspect the hoses regularly to ensure that they are not kinked, cut, or abraded. The quick couple hose attachments should be tested several times during the operation of the waterjet stinger to ensure they are firmly attached. If for some reason the hoses are disconnected from the waterjets, shut the pump down immediately to ensure the metal tipped ends do not whip around and hurt one of the team members. It is much better to anticipate and discuss safety concerns than to heal the wounds caused by a mistake or faulty equipment.

Summary

The waterjet stinger is easy to operate and transport. Very little training is necessary to operate the waterjet stinger. The pump intake should be placed in a fairly sediment free location in the streambed to operate properly. Hydrodrilling a planting hole with the waterjet stinger is fast and relatively splash-free. A large number of cuttings can be planted in a short period of time with very little effort compared to conventional planting methods. Planting into a hole filled with water allows each cutting to be planted directly into a wet microenvironment. The liquefied soil will settle around the cutting eliminating air pockets in the rooting zone that prevent root growth. In addition, the waterjet stinger creates saturated soil conditions around the cutting for a longer period of time. This means the cutting is in the best microenvironment to produce the largest and most desirable root mass possible, which in turn means that the establishment success rate will increase.

Overall, the waterjet stinger is relatively inexpensive when compared to other planting methods. The PMC prototype waterjet stinger cost about \$1000 for parts (see Appendix B) and labor to build it was about \$500 for a total of about \$1500. The design layout was planned to make the entire piece of equipment as simple as possible to build and operate. The most complicated part is putting the manifold together and this only takes about a half-hour. All of the parts can be ordered or purchased locally, except the pump. An experienced machinist can build the waterjet nozzle in a couple of hours with the plans provided in this paper. Once the parts are purchased and delivered, the entire waterjet stinger can be assembled in less than a day.

The waterjet stinger is not new technology, but we have taken it to another level. We have included all the information necessary for a person to build one. After it has been built, it will take some experimentation and experience in your particular soils and conditions to figure out the best way to hydrodrill your planting holes.

More information can be obtained by calling Chris Hoag at 208-397-4133 or Boyd Simonson at 208-397-4501. For those people who have access to the Internet, email messages can be sent to choag@id.usda.gov.



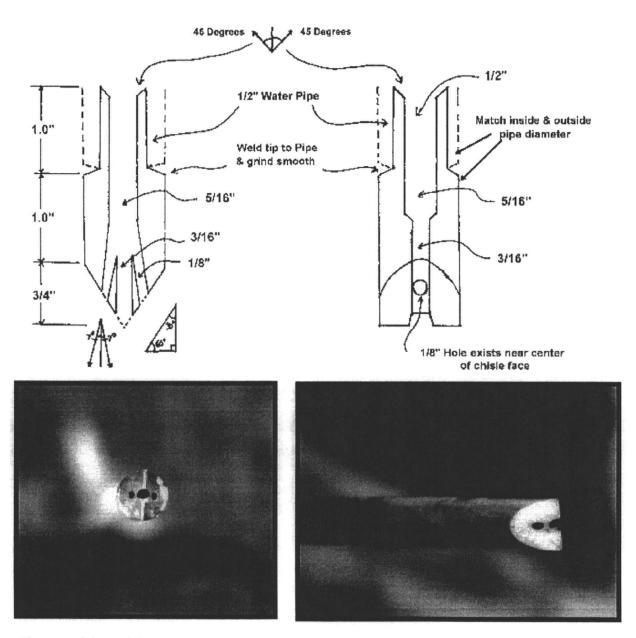
Acknowledgements

The development of the Waterjet Stinger would not be possible without the support and the generous financial assistance provided by the South Bingham Soil and Water Conservation District, Gem Soil and Water Conservation District, Squaw Creek Soil and Water Conservation District, the Camas Soil and Water Conservation District and Dick Scully (Regional Fisheries Biologist), Southeast Region, Idaho Department of Fish And Game.

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- Hoag, JC and D Ogle. 1994. The Stinger, a tool to plant unrooted hardwood cuttings of willow and cottonwood species for riparian or shoreline erosion control or rehabilitation.
 USDA Natural Resources Conservation Service, Idaho Plant Materials Technical Note No. 6, Boise, ID. 13 pp.
- Hoag, JC. 1993. How to plant willows and cottonwoods for riparian rehabilitation. USDA Natural Resources Conservation Service, Idaho Plant Materials Technical Note No. 23, Boise, ID. 12 pp.
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APPENDIX A: DETAILED DRAWING OF THE WATERJET NOZZLE TIP FROM DRAKE AND LANGEL (1998).

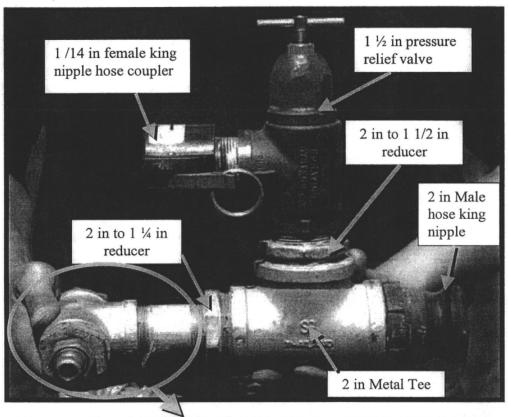


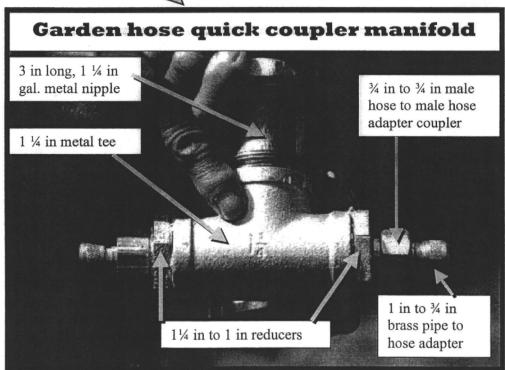
Pictures of the stainless steel nozzles that were welded to ½ in steel pipe. The stainless steel is expected to increase the life of the waterjet. A machinist built the pipe, handle, and nozzles as a single unit. The ball valve is added by the end user.

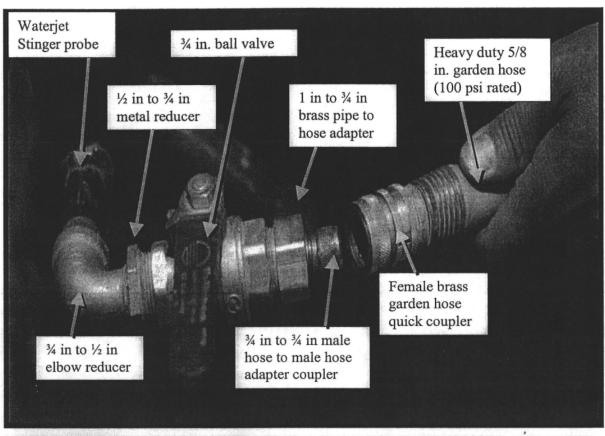
APPENDIX B: LIST OF MATERIALS FOR THE ENTIRE WATERJET STINGER.

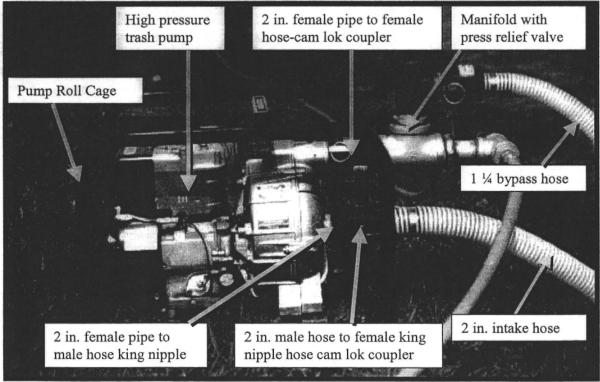
Name of item	Location	ocation Number		Cost
Manifold parts				
1 ½ in. pressure relief valve	Mani	fold	1	\$120.00
2 in. galvanized metal tee	Mani	fold	1	7.00
1 ¼ in. galvanized metal tee	Mani	fold	1	4.00
2 in. to 1 ½ in. galvanized metal reducer	Mani	fold	1	1.64
3-inlong 1 ½ in. galvanized metal nipple	Mani	fold	1	1.59
3-inlong 1 ¼ in. galvanized metal nipple	Mani	fold	1	1.19
2 in. to 1 ¼ in. galvanized metal reducer	Mani	fold	1	3.00
1 ¼ in. to 1 in. galvanized metal reducer	Mani	fold	2	5.00
2 in. male pipe to 2 in male coupler nipple	Mani	fold	1	4.75
1 ½ in male pipe to female cam lok coupler	Mani	fold	1	8.00
1 in. to ¾ in. brass pipe to hose adapter	Mani	fold	2	6.58
¾ in, to ¾ in, male hose to male hose adapter	Mani	fold	2	1.89
			Total:	164.64
Suction and Bypass parts				
1 ¼ in. plastic hose for discharge	Byp	ass	20 ft	30.00
1 ½ female cam lok to 1 ¼ male hose shank	Byp		1	12.00
2 in. male pipe to male hose coupler	Scre		1	5.80
2 in. plastic hose for suction for intake	Inta	ke	20 ft	40.00
2 in. male hose to female king nipple hose cam lok couple	er Inta	ke	2	29.70
2 in. hose clamps for plastic hose	Inta	ke	3	2.70
			Total:	120.20
Waterjet parts	•			
¾ in. ball valve	Prot	es	2	10.00
¾ in to ½ in elbow reducer	Prob	es	2	3.00
½ in to ¾ in metal reducer	Prob	es	2	2.00
1 in. to ¾ in. brass pipe to hose adapter	Prob	es	2	6.58
¾ in. male hose to ¾ in. male hose adapter	Prob	es	2	2.00
Female brass garden hose quick couplers	G. ho	ses	4	11.00
Heavy duty 5/8 in. garden hose (100 psi rated)			200 ft	120.00
Waterjets, manufactured by machinist			2	180.00
•			Total:	334.58
Waterjet pump				
2 in. female pipe to male hose king nipple	Pun	аp	1	5.30
2 in. female pipe to female hose-cam lok coupler	Pun	np	1	15.00
Pump and Motor (excludes freight)			1	495.00
Roll cage for pump			1	65.00
			Total:	595.30
Total cost of parts (as of March 2001)				\$1199.72

APPENDIX B: LIST OF MATERIALS FOR THE ENTIRE WATERJET STINGER. (continued)

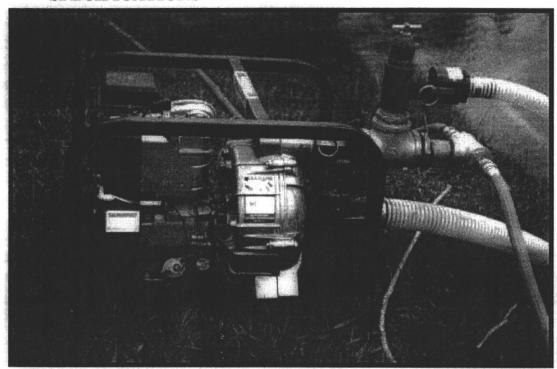








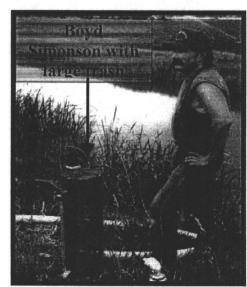
APPENDIX C: HIGH PRESSURE GASOLINE POWERED PUMP SPECIFICATIONS



Note: Metal cage around the pump and motor was purchased separately.

Specifications

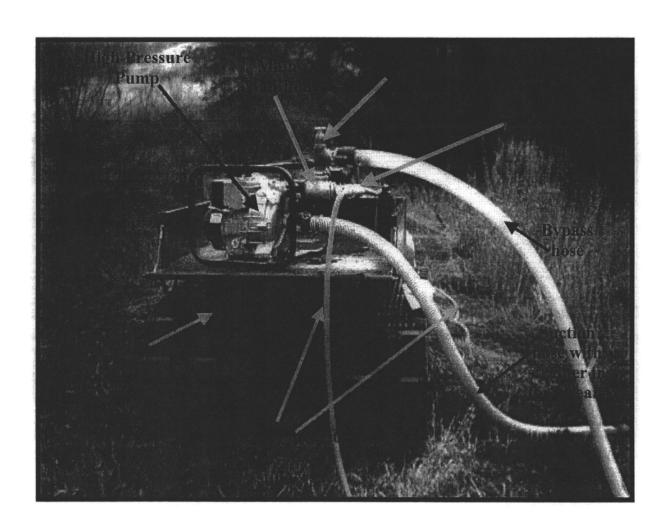
- 5 HP Gas powered High pressure pump
- 7200 GPH, 200 foot head, 88 psi max
- Vertical lift 18 ft
- Self priming pump with 2 inch NPT suction and discharge ports
- Aluminum closed impeller
- Cast aluminum housing
- Cast Iron volute
- Built-in check valve
- Water and trash pump strainer 2 in included
- 64 pounds



Note: Trash Strainer shown was built for large stream systems so it could be perched above the stream bottom and was heavy enough not to move with the stream current. The pump was shipped with a small strainer that attaches to the end of the suction hose for use on smaller stream systems (Not shown).

APPENDIX D: AN ILLUSTRATED DIAGRAM OF AN OPERATING WATERJET STINGER

The waterjet stinger is sitting on a large 6-wheel ATV during a workshop in Lapwai, ID on Little Lapwai Creek. The 6-wheel ATV is larger than what is necessary to transport the waterjet stinger. The track option for the ATV is not necessary.



CHARACTERISTICS OF POLE CUTTINGS

- Pole cuttings are harvested and planted while dormant (early winter to early spring).
- Branches, except a few at the top of the cutting, are removed from the pole at harvest making sure to keep the branch collars intact while pruning.
- Vigorous young poles with larger diameters establish more readily and successfully than older or small diameter poles.
- The stump ends of poles should be placed in water tanks, streams or ditches to keep them hydrated between harvest and planting.
- Pole cuttings tolerate being out of water briefly during transport; this interval of desiccation should be minimized.
- The depth of the planting hole must be sufficient for the stump end of the pole to be in ground water throughout the growing season even if the water table drops. The hole depth and the desired aboveground height of the planted pole will determine the length of pole needed.
- The traditional pole cuttings are tree-type cottonwoods (e.g., Rio Grande, plains, Fremont, lanceleaf, narrowleaf) or willows (e.g., Gooddings, peachleaf) used to establish the overstory structure of riparian forests.
- A second type of cutting is a whip used typically for streambank plantings and include thicket forming coyote willow as well as multi-stem shrub willows (e.g., bluestem, mountain, Bebb's, and arroyo) and redosier dogwood.
- The third type of pole cuttings include unconventional species of understory shrubs including New Mexico olive, false willow, and false



indigo. The high success rates of pole plantings with cottonwood and willow species of 80 to 90% can not be expected with these unconventional

species. These species can not tolerate long periods of hydration; planning will require a minimum delay between harvest and planting to achieve maximum success. Although understory riparian species are somewhat shade tolerant, poles of these unconventional species have poor survival if planted in the shade of a gallery forest.

• The use of donal stock can limit genetic diversity and can result in the production of unisexual pole cuttings. Establishing pole production areas using seedlings will assist in maintaining genetic diversity and an appropriate mix of male and female cuttings.

SITE FACTORS

- To determine appropriate species and pole lengths for revegetation, seasonal measurement of depth to ground water is highly recommended. Inexpensive shallow monitoring wells will confirm the depth and seasonal fluctuation of the water table. These groundwater depth measurements can help in the selection of species; for example, shrub willow species generally can tolerate shallower ground water depths (1.5 ft or deeper) than cottonwoods (4 ft or deeper).
- Electroconductivity (EC) measurements greater than 3 to 4 dS/m indicate excessive salinity that can restrict the list of species which will thrive. Wolfberry, screwbean mesquite, and fourwing saltbush are some of the woody species that can tolerate these salinity levels; whereas, many of the typical overstory pole cutting species (cottonwoods and willows) and unconventional understory pole species (e.g., NM olive, false willow, false indigo) will not perform well at or above this threshold.
- Soils with high percentages of cobble can be impossible to auger; whereas augered holes in dry sands and gravels will often collapse before planting. Fine-textured soils with high percentages of silt or clay will not permit good aeration at depth which will diminish root development and often survival. Visual observation of soil samples from augered holes should be sufficient to determine if soil texture will be limiting; these samples can also be analyzed for EC to determine if near-surface or subsurface soil salinity is a problem.
- Pole plantings are not appreciably affected by weed competition because the poles are not shaded by the canopy of annual weeds, and weeds will not deplete the soil moisture supply in the capillary fringe.
- Pole planting into cold soils of high elevation sites can be problematic because rooting will not occur until soil temperatures moderate in midsummer. The buried portion pole can degrade in the time between the planting of dormant cuttings and when warm subsoils occur.
- High flow events on montane streams, unregulated rivers, and arroyos can easily erode shallowly planted cutting stock. Dormant pole and whip cuttings planted to substantial depths can resist the extractive forces of flood flows. Willow whips with their inherent flexibility are more appropriate for higher flow regimes and less stable channel systems.
- Pole cuttings of cottonwood species will usually die when planted in alluvium with less than 3 feet of aerated soil above the water table, while shrub willow species are tolerant of shallower ground water conditions. Whether a site is truly a wet meadow environment and not appropriate for woody vegetation needs to be evaluated in the planning stage. Shallow depth to ground water, fine-textured organic-rich or anaerobic soils, and low stream gradients are some factors consistent with wet meadow environments.

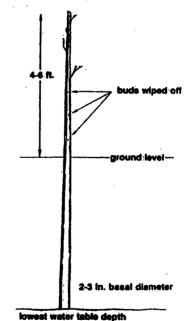
Revegetating Southwest Riparian Areas

Steps for Successful Pole Plantings

The following steps have been successful in reestablishing cottonwood and willow trees in riparian communities.*

- Select sites with coarse textured soils, salinities less than 3,000 ppm and flooding or ponding less than 3 weeks during the growing season.
- Measure water table fluctuations for at least 1 year, preferably longer, to determine the lowest water table depth. Take a reading at least once a month.
- Cut poles from stands of young, rapidly growing trees, if possible. Use only two to four-year old wood. Select straightpoles two to three inches in diameter. The total length of the poles needed depends—upon—the water table depth (see #7 below).
- 4. Cut poles while dormant during January and February. Remove all side branches except the top two.
- 5. Soak poles in water for 10 to 14 days before planting.
- 6. Dig holes to the depth of the lowest anticipated water table. Sites where the water table will be within one foot of ground surface during the growing season are better suited for willows than cottonwoods.
- 7. Place the poles in the holes the same day they are removed from the soak treatment. Set the butt as close to the lowest annual water table elevation as possible. Four to 6 feet of the pole should remain above the ground surface after planting.

- 8. Backfill the holes carefully to prevent air pockets. Use dry surface soil.
- 9. Put tree guards around the poles to protect from rodents or rabbits.
- 10. As buds begin to swell (usually in April or May), wipe them off the lower two-thirds of the pole. This will reduce evapotranspiration water loss and stimulate root growth.
- 11. Exclude the planting area from livestock grazing for two to three growing seasons. Control beaver, or place protective screening around the trees, if necessary.



^{*}The Soil Conservation Service and the U.S. Fish and Wildlife Service developed the technical procedures described in this publication.